

The REFRIGERATION & AIRCONDITIONING Business

JUNE 1961

3-HP?

5-TON?

7½-HP?

WATER-COOLED?

\$3000?

\$855?

\$1096?

AIR-COOLED?

PACKAGE UNIT?

SPLIT SYSTEM?



~~I tried to buy~~
AIRCONDITIONING
for a store

EDITORIAL DEPT
UNIVERSITY MICROFILMS INC
315 NORTH FIRST ST
ANN ARBOR MICH 48106

The magazine for the Installing Contractor-Dealer of airconditioning
and commercial and industrial refrigeration



**DESIGNED
TO
DELIVER**



Other large plants may deliver a variety of products but Viking's spacious, modern plant was designed and built from the ground up for one specific purpose: the production of thin-wall copper tube of unsurpassed quality.

The equipment in the plant whether for fabrication or testing is of special design, built to Viking specifications, or by Viking itself.

So it is with the people of Viking. Each worker is specially trained for a single job — his part in the production of thin-wall copper tube for the leading makers of refrigeration and air conditioning equipment. The entire Viking production team — factory, facilities, men — work to a tradition that demands the best. Is there a better way to insure quality?



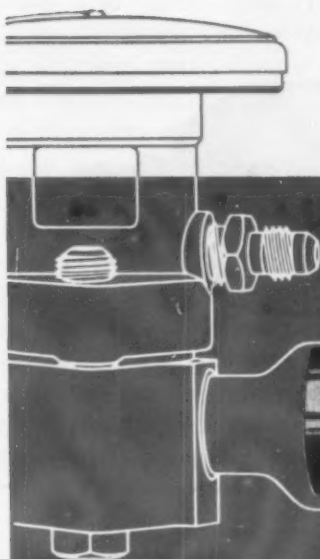
VIKING

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CLEVELAND 10, OHIO

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for
you



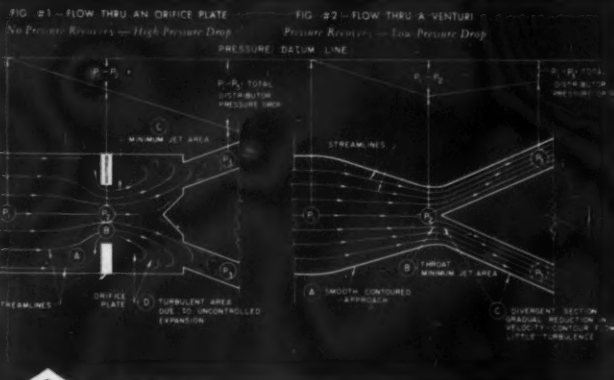
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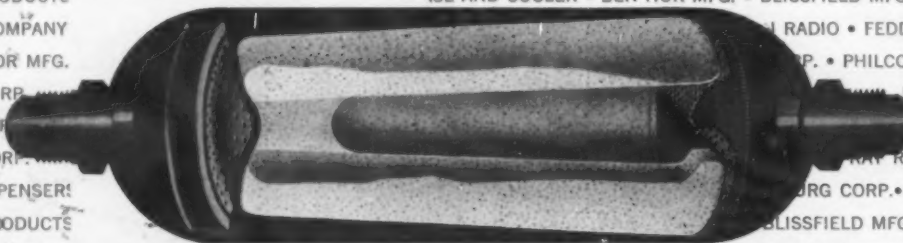
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The REFRIGERATION & AIRCONDITIONING Business

JUNE 1961

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FOR DESCALING CONDENSERS
FOR CIRCULATING R-11 WHEN
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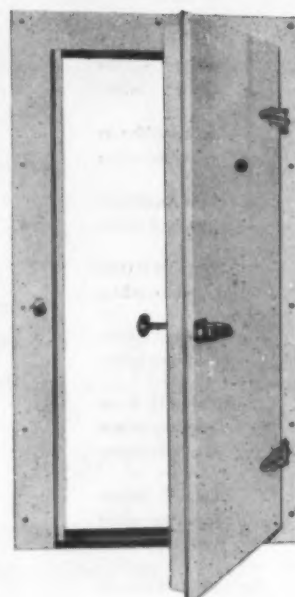
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THE "FINE LINE" OF QUALITY

What makes a system fail?

THE PHOTOS AT RIGHT TELL OUR STORY! Heat entire tube length to soldering temperature. Introduce wire solder at the base of the tubes. Watch capillary attraction take over—the solder will rise and fill the entire gap to the top of the tube if clearance is .008" or less. Without capillary attraction, the bond between tube and fitting is guesswork—costly joint failures can result. Check the clearance between tube and fitting "on the job" with NIBCO's JOINT TESTER.



Joint failures in a copper plumbing system may be due to a variety of reasons that have nothing to do with poor workmanship on the job. Among the most important factors are:

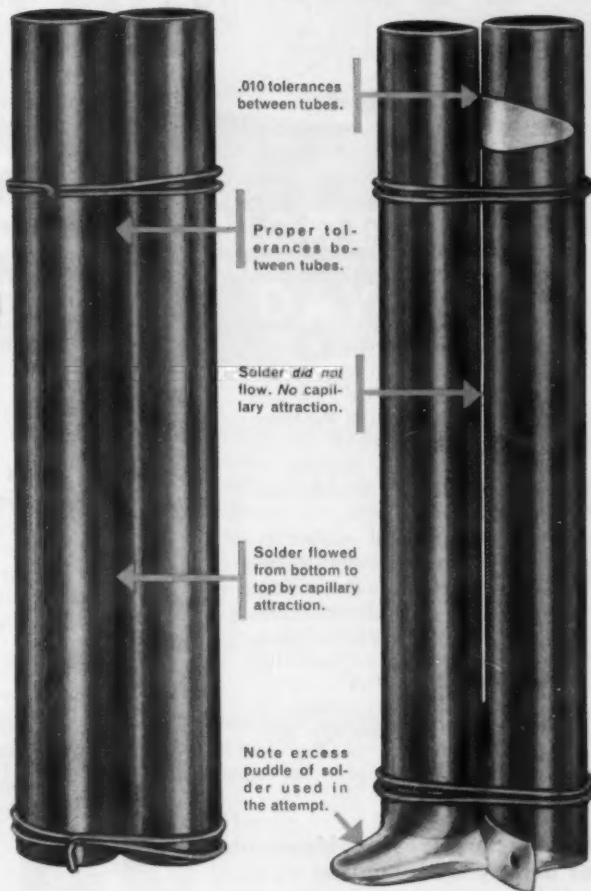
1. Soldering clearance between outside of tube and inside diameter of the solder cup.
2. The depth of the solder cup into which the tube is inserted.
3. The depth of solder penetration as illustrated below.

The difference between a NIBCO fitting and one that's too large may be almost microscopic, but it can mean the difference between success and failure.

When you specify NIBCO, you can be sure you'll get NIBCO's "fine line" of quality in every fitting because all NIBCO fittings are made and inspected strictly to A.S.A. standards of size, roundness and quality.



DEPTH OF SOLDER PENETRATION drastically affects the breaking load of the joint. When you have solder penetration of only one-third the cup depth of a $\frac{3}{4}$ " fitting, the breaking load will be approximately 2100 lbs. Solder penetration of the entire cup depth, however, raises the breaking load to approximately 7000 lbs., which is stronger than the tube.



SEND FOR A FREE TESTER

You can quickly determine whether soldering clearance is too great by using the NIBCO JOINT TESTER. If the tip of it can be slipped into the clearance between tube and fitting . . . something is wrong! You'll also receive a free copy of NIBCO's new booklet, "How Much Are You Paying for an Extra 5%."

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Please send free NIBCO JOINT TESTER and copy of NIBCO booklet, "How Much Are You Paying for an Extra 5%."

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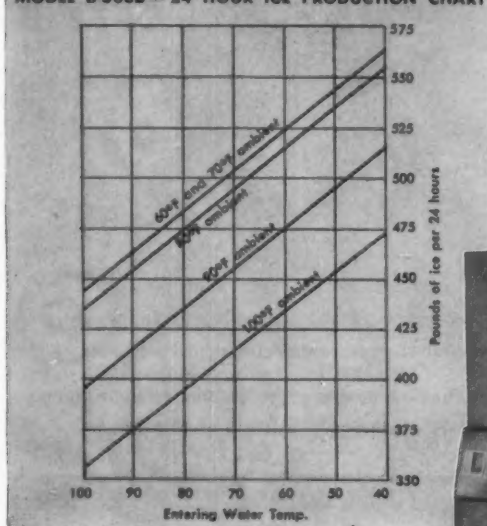
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what makes
CRYSTAL TIPS ICE MAKERS
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22% MORE
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MODEL B-500B - 24 HOUR ICE PRODUCTION CHART



Check this ice making capacity chart with any other ice maker of similar size and price and you'll discover Crystal Tips tops them all.

You can give your customers *more* ice per day when you deliver the Model B-500-B Crystal Tips ice maker. Check the ice making capacity chart (left) with that of any other ice maker of similar size and price. When you do, you'll see Crystal Tips is "tops". Crystal Tips is also the winner when you compare space requirements, dependability, serviceability and initial investment costs. All this PLUS bigger distributor profits are mighty BIG reasons why you can make more money selling Crystal Tips ice makers.



MODEL B-500 Crystal Tips
2-in-1 Ice Maker. Air and water cooled models available.

This air-cooled Model B-500 is selling better than ever because it makes more ice per day. It also gives your customers a choice of TWO types of ice... large, round, clear ice cubes or tasty, hard, fast cooling ice chips. Write today for complete facts... mail coupon *now*.

You can make more money selling
Crystal Tips ice makers.
Clip and mail coupon today
and we'll tell you how...



Crystal Tips

First name in automatic ice makers

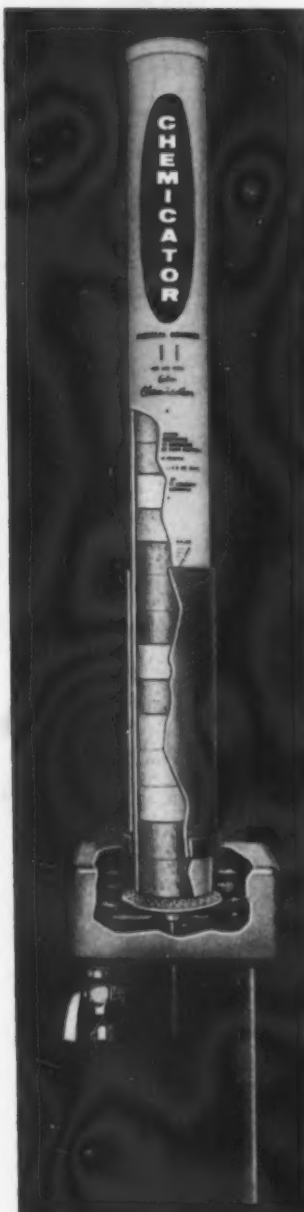
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CHEMICATOR keeps scale forming deposits in solution to prevent scale.



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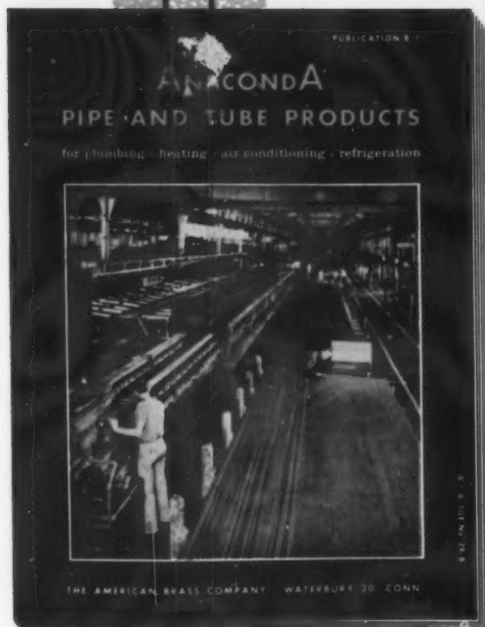
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on brass and copper pipe and copper tube

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Please send me a free copy of Publication B-1.

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NEW Mueller Climatrol Winter Air Conditioner

Stop "short changing" yourself by quoting competitive equipment only. Give your customer the choice of a top-quality unit, too—such as this new Model 119-219 gas or oil heating unit. *Its value overshadows price...* gives your customer a wider margin of benefits, gives you a wider margin of profit. Tell prospects about features like these, and they'll want to pay the difference...

NEW ENDURAL HEAT EXCHANGER* — A Mueller Climatrol exclusive — and a convincing sales point. We treat the heat exchanger inside and out with the same silicon coating used on jet engines — for longer life through better protection against high heat corrosion, rust, and chemical action.

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Do your products require fabricated or finish formed parts or special tubular shapes? Our specialized skills, backed by 40 years of experience, offer you the opportunity to improve product quality . . . lower unit cost!

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Saves Cost—Parts—Servicing Time

With just three standard sizes of DFN Demountable Shells and economical interchangeable cartridges, you've got a complete "clean-up" method for any system from 1 thru 100 tons.

You save time and cost with each replacement—reduce inventory—always have the right size replacement on hand—and get the proven reliability of DFN performance.

DFN Demountable Shells are made of all brass—have tongue-and-groove forged flanges—easily serviced with 6 bronze cap screws. Cartridges are compact, factory-assembled in unbreakable, ready-to-use brass casing. Choice of 3 desiccants. See your wholesaler or write for Bulletin D-6.

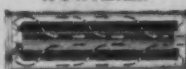


IT'S A FILTER-DRIER!

Simply change low-cost cartridges to meet conditions.



IT'S A FILTER!



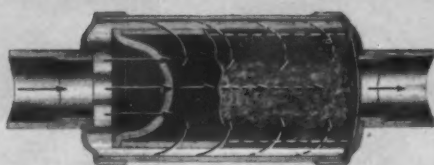
IT'S A STRAINER!



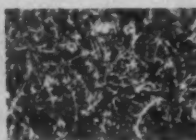
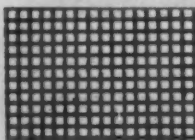
The outer shell stays on the line for permanent service.

Also available in double length shells.
Any two cartridges may be used in series.

Keep Systems Clean to PREVENT HERMETIC BURNOUTS



*Permaclean Filter element filters particles down to 5 microns, or 27 times finer than 100 mesh screen. See comparisons magnified 8 times.



DFN

PERMACLEAN FILTERS for Suction and Liquid Lines

High-capacity filter removes all foreign matter
—Prevents scored parts—stuck valves
—clogged passages

Major causes of hermetic burnouts are abrasive particles, gummy sludges and metallic salts which form during operation. All these contaminants are removed from oil and refrigerant by installing DFN Permaclean Filters on the suction line.

Permaclean Filters are the only filters designed for suction line installation and proved by years of service. They have a specially-processed low-micron* filter element in an all-brass shell for permanent installation. See your wholesaler or write for Bulletin G-19 and A-12.

DFN

**THE McINTIRE
COMPANY**
Livingston, New Jersey

Since 1925—Specialists in Drying, Filtering, Straining.

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Series 219 without external range adjustment.



Series 219 space thermostat with range adjustment knob and integral air bulb.



Series 219 with external range adjustment.

LOOK WHAT'S NEW IN REFRIGERATION TEMPERATURE CONTROLS



Series 239 has both external range and differential adjustment.

**Now! Compact size,
highly accurate
repeat performance,
plus other new
sales features!**

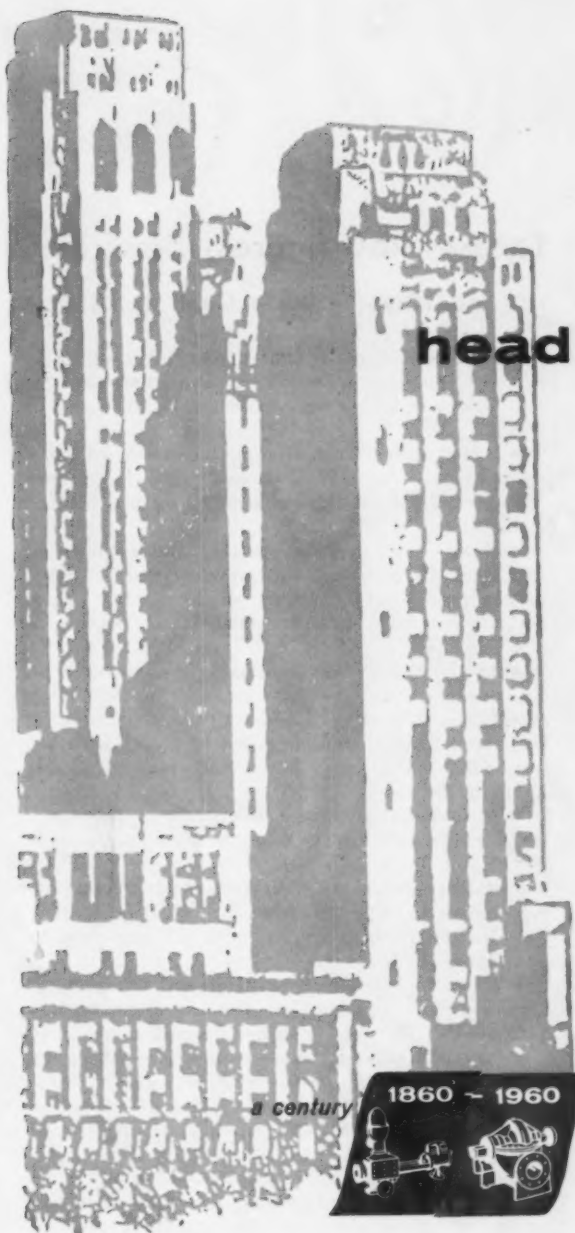
Here's a new line of small, compact, Penn refrigeration temperature controls which has a *wider range* of applications with *fewer models*. The Series 219 has a fixed differential while the Series 239 differential is adjustable. Rated at 16 Amps., these models feature extremely close differential, precision "repeat" accuracy, and are not affected by barometric pressure or cross ambient temperature problems. Extra features include built-in conduit fitting on Series 219, visible linear scale and small bulb size. Closed-tank fittings and bulb wells as well as built-in compensation for ambient temperature are also available. Learn more about these controls . . . write for Bulletin 3270.

PENN CONTROLS, INC. Goshen, Indiana

EXPORT DIVISION: 27 E. 38th ST., NEW YORK, N. Y.

AUTOMATIC CONTROLS FOR HEATING, REFRIGERATION, AIR CONDITIONING, APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

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head in the clouds

When an air-conditioning installation calls for unusual pumping service, Ingersoll-Rand is the one to supply it. I-R pumps are made to meet requirements of any tonnage, any head—including the highest skyscrapers. Exclusive design features and rugged construction mean dependable, low-cost operation. The wide range of Ingersoll-Rand pumps being specified for air conditioning include Motorpumps, cradle-mounted and horizontally split pumps for deliveries to 3500 gpm and heads to 1100 feet.

a century 1860 ~ 1960



of pump progress

from the leading manufacturer

Ingersoll-Rand

11 Broadway, New York 4, N.Y.

Ingersoll-Rand
Horizontally Split
Centrifugal Pump

12049



OTHER I-R PUMPS FOR AIR CONDITIONING SERVICE:



"K" Line
Motorpumps



Motorpumps



Cradle-
Mounted Pumps

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BUSINESS Trends

HOW OUR BUSINESS IS DOING

SALES IN FEBRUARY (Bureau of Census) for airconditioning and commercial refrigeration equipment distributors, contractors, and wholesalers:

DOWN 8% from a year ago

DOWN 12% from previous month

SALES FOR 1961 so far are:

DOWN 6% from a year ago

INVENTORIES IN FEBRUARY (Bureau of Census) for airconditioning and commercial refrigeration equipment distributors, contractors, and wholesalers:

UP 2% from a year ago

DOWN 6% from previous month

CURRENT LIABILITIES IN MARCH for business failures of 4 airconditioning contractors totaled \$47,000 (Dun & Bradstreet). Compare this to:

4 failures totaling \$444,000 liabilities a year ago

2 failures totaling \$44,000 in February

GENERAL BUSINESS INDICATORS

	Latest Period	Previous Period	% Change
Housing Starts (thousands)			
Month ending 3/31/61	106.5	79.9	+33.3
New Construction , put in place (\$ billions)			
Month ending 3/31/61	3.9	3.6	+ 8.3
Unemployment (% of labor force)			
Month ending 3/31/61	6.9	6.8	+ 1.5
Manufacturers' Inventories (\$ billions)			
Month ending 2/28/61	53.6	53.7	- 0.2
Manufacturers' Unfilled Orders (\$ billions)			
Month ending 2/28/61	45.6	45.3	+ 0.7
Retail Sales (\$ billions)			
Month ending 3/31/61	17.9	15.2	+17.8
Personal Saving (\$ billions)			
Quarter ending 12/30/60	27.2	29.2	- 6.8
Disposable Personal Income (\$ billions)			
Quarter ending 12/30/60	358.1	357.5	+ 0.2
Gross National Product (\$ billions)			
Quarter ending 12/30/60	503.5	503.5	No change
Industrial Production Index (1957=100)			
Month ending 3/31/61	104	103	+ 0.9

Source: U.S. Dept. of Commerce

Latest 1960 figures show rise in most phases of industry

Additional production figures from 1960 continue to roll in despite the fact that 1961 soon approaches the half-way mark. Latest to be announced is this information:

- **Automobile airconditioning** continues to be a strong market. Sales in 1960 were a fifth larger than 1959 as 697,021 units were installed against 580,721 in 1959.

- **Production of airconditioning and commercial and industrial refrigeration equipment** was 5% higher in 1960 than in 1959. Industry sources predict a similar jump this year, according to the U.S. Department of Commerce.

- **In the unitary airconditioning equipment field**, 315,000 year-round coolers were sold in 1960. This does not include window and wall units. Of the 315,000 about 205,000 were installed in homes with the rest going into stores, offices, and commercial and industrial firms.

With inventories at the end of 1960 at a 4-month supply level, officials estimate a slight increase in production this year.

- **Factory shipments of larger central airconditioning equipment** were 5% higher in 1960 than in 1959, but total dollar shipments slumped 11%, according to government figures.

- **Exports of airconditioning and refrigeration equipment** hit a new high last year with approximately \$315 million. This represents a 22% increase over 1959.

- **Installed cost of central station airconditioning systems** in large multi-room buildings and commercial and industrial applications has been set at \$800.8 million for 1960 by Air-Conditioning and Refrigeration Institute (ARI).

This compares with an estimated \$716.6 million in 1959. Figures are based on shipments for use in this country of compressors, condensing units, absorption units, and centrifugal and reciprocating liquid-chilling packages of 25 hp or over. Excluded are data for brine chillers or ammonia equipment.

- **Direct shipments of galvanized steel sheets** to the airconditioning and ventilating industry showed an increase of 18% in 1960 over 1959, according to American Iron and Steel Institute figures.

The total of 148,918 net tons shipped to our industry represents only direct shipments for use in commercial and industrial cooling and ventilating systems. It doesn't include sheets purchased through warehouses or distributors for ductwork.

Figures also don't show galvanized steel used in manufacturing room airconditioners.

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the new and
versatile*

5250 TNS

AIR-COOLED
AIR-CONDITIONER

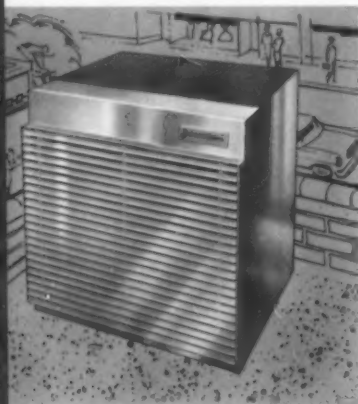


A PRACTICAL APPROACH TO ECONOMICAL,
HIGH EFFICIENCY COOLING FOR COMMERCIAL—
INDUSTRIAL BUILDINGS

advance designed for the sixties

NEW JANITROL 52 SERIES AIR COOLED AIR CONDITIONERS

Outwardly beautiful and pleasing to the eye, inwardly rugged and powerful, new Janitrol 52 Series units combine years-ahead styling and cooling performance . . . provide truly low-cost central cooling with matchless reliability and performance.



JANITROL'S ADVANCED DESIGN . . . A SAFEGUARD AGAINST PRODUCT OBSOLESCENCE!

The weatherproof, high-efficiency 52 Series condensing unit, containing all moving refrigeration parts, installs outside. Available in six basic capacities from 22,200 to 110,200 btu/hr.



Full A.R.I. certification: Every Janitrol unit meets all standards of Air Conditioning and Refrigeration Institute.

STANDARDS OF EXCELLENCE . . .

In Performance—large condensing coils assure efficient operation with outdoor temperatures up to 125°F!

In Styling—crisp, modern lines distinguish the new 52 Series. Cabinets are finished in durable, automotive-type enamel.

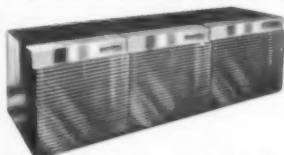
In Economy—The top-mounted fan bathes condensing coils in a jet stream of cooling air to raise efficiency and reduce current usage. Coils are shaded from the sun by louvers.

In Quietness—The powerful compressor is mounted on rubber-cushioned, resilient springs . . . cabinet is heated with special sound-deadening material.

In Safety—Complete overload and weather protection is provided. Enclosing grilles thoroughly safeguard children and pets.

In Servicing Ease—all components are easily accessible. Service panels can be removed without effecting operation during service checks.

MULTIPLE COMBINATIONS PROVIDE ECONOMICAL, HIGH CAPACITY COOLING



Modular cabinet design and upflow exhaust permit compact, multi-unit installations. Only the grilled, air-intake side of the cabinet requires clearance.

Any desired number of Janitrol 52 Series units may be installed together, with zero clearance between, to provide a variety of higher capacity combinations from 120,000 to over 1,000,000 btu/hr. Only Janitrol offers custom-built capacities at standard model cost!

JANITROL

year 'round conditioner

Combines quality gas heating and waterless cooling! Less than four sq. ft. of floor space needed for most installations. Features include famous Dura-Tube heat exchanger with 20-year warranty. Unique bypass for correct air flow on heating or cooling cycle without adjustments. Powerful air-cooled 52 Series condensing unit, ADD-ON cooling—install for heating only, add cooling later.



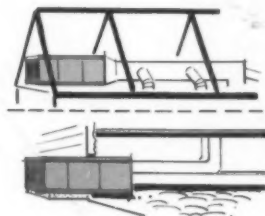
ADD-ON COOLING

Adapts most any warm air furnace for thrifty, efficient central cooling. Cooling coil mounts in duct, attractive, air-cooled 52 Series unit goes outside. Powerful, quiet performance with outside temperatures to 125°F. Easy to install.



"J-LINE" self-contained conditioners

An economical solution for many cooling needs. One compact unit contains blower, compressor and coils. For use with ducts or as free discharge. Install through wall in crawl space, attic or other limited access locations.



BLOWER-COIL UNITS

Smartly styled cabinet contains cooling coil and blower for use as free discharge or with ducts. Units are attached to ceiling to save floor space. Very quiet and efficient!



GAS-FIRED DUCT FURNACES

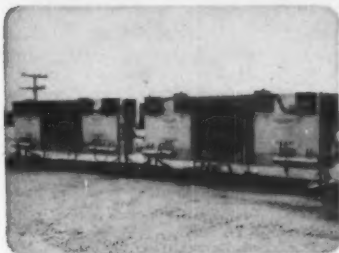
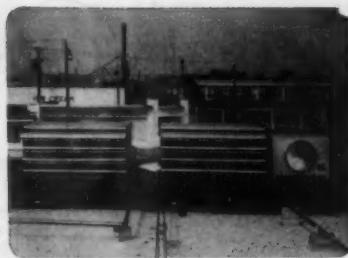
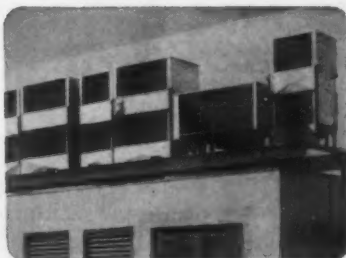
For installation in a duct where the air is circulated by a separate blower. Especially adaptable for industrial heating applications in combination with cooling. 73 Series in six sizes from 50,000 to 225,000 btu/hr. 72 Series in sizes 200,000 and 300,000 btu/hr. may be combined to provide unlimited capacity range.



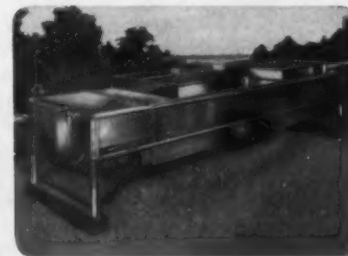
JANITROL [®] **MR**
HEATING AND AIR CONDITIONING
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IN CANADA: MOFFAT HEATING & AIR CONDITIONING DIVISION
MOFFATS LTD., TORONTO 15
ALSO MAKERS OF SURFACE INDUSTRIAL FURNACES, KATHARON HUMIDITY CONDITIONING,
JANITROL RESIDENTIAL HEATING AND COOLING EQUIPMENT

**throw your
compressor
out!***

***outside that is!**



STOP
wasting
costly
building
space!



USE KRAMER OUTDOOR CONDENSING UNITS

FOR AIR CONDITIONING—COMMERCIAL, INDUSTRIAL & SUPERMARKET REFRIGERATION

Kramer's Outdoor Condensing Units will operate outside without any additional protection or adjustment under all temperatures and weather conditions. They can be used for any application—air conditioning, commercial refrigeration, supermarket application, or industrial refrigeration.

Completely assembled, wired, tested and factory run-in, the units arrive on the job ready to operate. Simple hookup eliminates costly installation and control adjustment time. Kramer's Outdoor Condensing Units end waste of valuable indoor space.

WRITE FOR BULLETIN

KRAMER TRENTON CO., Trenton 5, N. J.

47 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER

circle 44 on reader service card

RECENT *Installations*

Tile ceilings are air diffusers

USING STANDARD PERFORATED MINERAL tile ceilings as air diffusers is the unusual method of obtaining acoustical treatment and improved conditioned air circulation at the general office building of Armstrong Cork Co., Lancaster, Pa.

The tiles have several advantages. First, the diffuser holes in the tile aren't noticeable as they fit in with the overall design pattern of the ceilings. They also eliminate noise, drafts, cold spots, and a lot of ductwork, as only a duct stub is needed in each room to discharge the air into the plenum above the suspended ceilings in the new building.

The contractor who installed the 1000-ton capacity system, which utilizes two hermetic centrifugal compressors, was B. & G. Olsen Co., Richmond, Va.

Controlled air ripens apples

APPLES ARE RIPENED ON A TIME schedule through refrigerated controlled atmosphere by using interconnected Dunham-Bush units that make it possible for one unit to run during a light load or all of the three units during heavy loads.

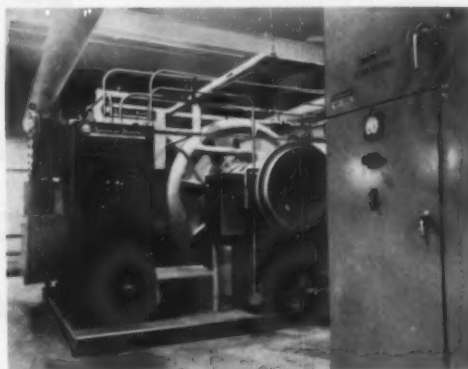
The apples are "CA" type, from Heidema Brothers, Holland, Mich. Three direct-drive com-



pressors, nine hot gas defrost units (three per room), and an evaporative condenser refrigerate the 30 x 50 x 21' storage rooms.

New technique saves \$20,000

A NEW AIRCONDITIONING SYSTEM technique using refrigeration machines which operate on high input voltage saved more than \$20,000 in operating costs of the airconditioning



installation at the Federal Office Building, Albuquerque, N.M. The saving accrued from elimination of transformer capacity for the compressors and from reduced wiring costs.

The building, the largest of its type in the state, is cooled by two 250-ton American-Standard "Tonrac" centrifugal hermetic units that operate from a 4160-v. electrical power input. The units are used in conjunction with supply fans, heating and cooling coil banks, exhaust fans, plumbing fixtures, and convector units.

Colored coolers complement club

BLUE PLASTIC COLD STORAGE DOORS that blend with the nightclub's interior provide color, easy handling and cleaning, reliable insulation, and sanitation at the swank Summit Club, Bala-Cynwyd, Pa. The doors, on cooler and freezer rooms, also cut fatigue and that trapped feeling when inside the compartment, the club's female help reports.

The blue pigment is an integral part of the plastic door's surface to assure permanent color and to blend with the rich red floor tile and blue wall tile in the kitchen. The doors, manufactured by Jamison Cold Storage Door Co., resist discoloration or fading due to chemical cleaners,

Continued on page 74

"PLUS FEATURES HELP SELL THE ALL NEW . . ."

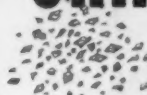


automatic

ICE CUBERS

and automatic

ICE CHIPPERS



"Model CU-200 Cuber"



FOR CHIPS
Model CH 550
550 lbs. daily
"chip harvest"
500 lbs. bin
storage capacity

FOR CUBES
Model CU 200
200 lbs. daily
"cube harvest"
250 lbs. bin
storage capacity
Model CH 400
400 lbs. daily
"cube harvest"
450 lbs. bin
storage capacity

● Produce diamond-bright ice chips and clear, solid cubes — shaped as a cube should be. (Cubes last longer — displace more liquid)

● Store MORE than a full day's ice production, yet take a modest amount of floor space. (You get all the ice you need even at "peak-usage periods").

● Handsome cabinetry is suitable for use in dining or other customer areas. Five non-fading fiberglass colors make it easy to match with existing decor. Rugged yet lightweight fiberglass cabinetry can't rust or corrode — lasts a lifetime. Both interiors and exteriors have contoured corner-less edges.

● Quiet operation and minimum maintenance. Improved and simplified design means fewer operating parts. (Refrigeration components are manufactured by the recognized leaders of the industry). Easy to operate.

● Easy-access front panel completely exposes mechanical compartment and principal components for servicing. Easy to install. Ice maker is installed on top of matching storage bin. Insulating Inert Foam between walls of cabinet locks in sound and temperature. Heavy-duty compressor. Water or air-cooled condenser. F12 refrigerant.

WE INVITE COMPARISON — dollar for dollar and feature for feature. The new Kodiak line is ahead in design — easy to sell, easy to install and easy to maintain. Distributorships in some areas are still available. For complete information without obligation, write:

KODIAK, INC.

Telephone: CA 7-8354

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KODIAK, INC., 297 Commercial Street, St. Paul 6, Minnesota

Please send me complete details about Kodiak.

Name

Company

City State

Type of Business

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Add up the advantages of asking for Wolverine Refrigeration Service Tube



Wolverine Tube ACR

CLEAN + DRY + CAPPED
WITH REUSABLE END SEALS +
CONSISTENT IN TEMPER +
MADE EXPRESSLY FOR
REFRIGERATION SERVICE
ENGINEERS

Wolverine Roll-O-Tube®

CLEAN + DRY + CAPPED
WITH REUSABLE END SEALS +
CONSISTENT IN TEMPER +
ROUND CARTON CAN BE USED AS
REEL + UNUSED TUBE REMAINS
SAFELY IN CARTON + JUST
PULL TAPE—UNREEL TUBE



WOLVERINE TUBE
DIVISION OF

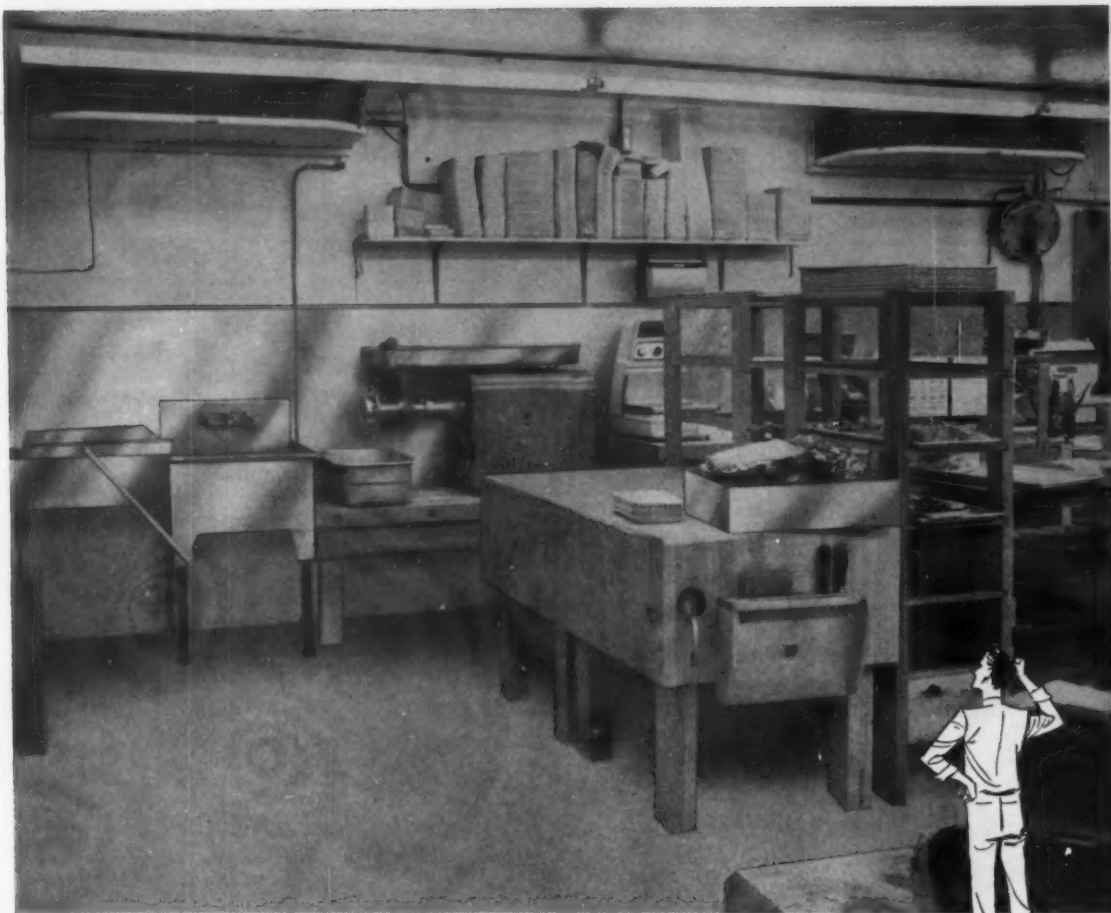
Calumet & Hecla, Inc.

DEPT. N, 17228 SOUTHFIELD RD., ALLEN PARK, MICH.

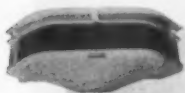
TUBEMANSHIP in Copper—Copper Alloys—Aluminum—Special Metals

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WHERE'S THE UNIT COOLER?



DUNHAM-BUSH 'TJ'—

The perfect unit for installation at the corner juncture of walls and ceiling—occupying minimum valuable storage space.

Aluminum casing finished in baked white enamel. Capacities range from 6,750 to 36,000 BTU/HR at 15° T.D.

DUNHAM-BUSH 'UC'—

Deep plenum chamber, full drain pan and rugged channel iron hangers are but a few of the construction features that have made these units first choice of refrigeration engineers everywhere.

Split circuiting, providing for proper loading per circuit . . . and accurate, conservative ratings are a few of the engineering features that guarantee maximum performance. Capacities 5,250 to 48,000 BTU/HR at 15° T.D.



Like most Dunham-Bush unit coolers the 'WJ' shown in the cutting room above was specifically engineered to be unobtrusive . . . occupy minimum valuable storage space. Capacities of this line range from 5,250 to 36,000 BTU/HR at 15° T.D.

The 'WJ' Wall Jet unit coolers as other units in the expansive Dunham-Bush line feature aluminum casings finished in baked white enamel, stainless steel hardware, generous size drain pans, plate type serrated fins, tubing sized according to load, and accurate conservative ratings.

Dunham-Bush, producer of the industry's most complete line, offers units to meet all your needs: low or medium temperature unit coolers, product coolers, plasti-coolers, gravity coils, glycol defrost units, water savers, semi-hermetic or open type compressors and condensing unit.

DUNHAM-BUSH

DUNHAM-BUSH, INC.

WEST HARTFORD 10, CONNECTICUT, U. S. A.

SALES OFFICES LOCATED IN PRINCIPAL CITIES

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Product DATA

Thru-wall airconditioner

Product: "Builder's Model" thru-the-wall airconditioner.

Manufacturer: York Div., Borg-Warner Corp., York, Pa.

Features: Front panel removable by depressing two quick-release catches. Sliding control cover has no hinges or springs. Sized to fit between two stud spaces or concrete blocks. Baked enamel on zinc-grip steel casing may be installed during or after building operation with unit inserted as needed.

circle 136 on reader service card

Refrigerated bakery case

Product: Refrigerated bakery case (Models RCC-6, LRCC-6).

Manufacturer: C. Schmidt Co., Cincinnati, Ohio.

Features: Measure 6'3" x 31 1/2" x 50 or 42". Stainless steel trim and wooden base



and legs. Refrigeration system already mounted in base and needs only electrical hookup.

circle 137 on reader service card

Sheet metal shear

Product: Portable, electric sheet metal shear (Model 8851).

Manufacturer: Airserco Mfg. Co., Pittsburgh, Pa.

Features: Starting from an edge or from 1/4" starting hole, will cut 1/8" ribbon of metal from sheet stock. Will handle 19 gage sheet steel and does not distort metal stock. Available with it is a "Docken" shear head (Model 8850) for attachment to most industrial, portable electric drills.

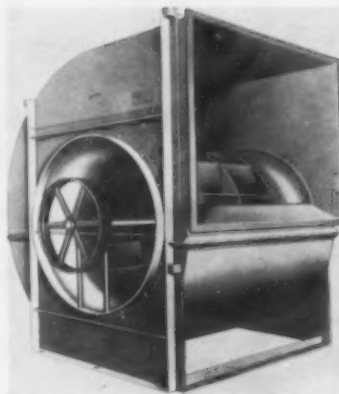
circle 138 on reader service card

Ventilating fan

Product: Series 600 "Centriflow" ventilating fan.

Manufacturer: Worthington Corp., Harrison, N.J.

Features: Basic fan structure has unweld construction makes preferred all-welded housing standard on all fans



regardless of class. Advanced wheel design with backwardly inclined blades assures smooth and unrestricted air flow for high efficiency and quiet operation for applications where low noise level a must.

circle 139 on reader service card

Water cooler

Product: Drinking water cooler (Model WF).

Manufacturer: Temprite Products Corp., Birmingham, Mich.

Features: All plumbing connections concealed within the cabinet, permitting flush-to-wall mounting. Highly durable heavy gage steel cabinet finished in gray enamel. Anti-splash top of extra deep stainless steel, which, with water flow control valve, gives uniformly smooth water stream with no spurting or splashing. Both fingertip and foot controls standard on all models. Capacities from 6 to 22 gph, and either air-cooled or water-cooled condensers available.

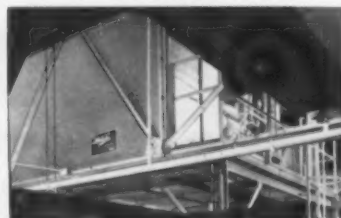
circle 140 on reader service card

Makeup air unit

Product: Horizontal dual-fan, direct gas-fired makeup air unit ("Sun-Flo" Model AH-2).

Manufacturer: Metals Engineering & Mfg. Co., Inc., Detroit, Mich.

Features: Capacities of nine sizes in series range from 20,000 to 60,000 cfm and from 1,875,000 to 6,000,000 Btuh.



Unit maintains constant discharge temperature of 80 F through outdoor temperature range of -15 to 80 F. Unit shown is ceiling mounted and has make-up air capacity of 25,000 cfm.

circle 141 on reader service card

Portable time control

Product: Portable time control for window airconditioners (Models AC1-0, AC2-3).

Manufacturer: Paragon Electric Co., Inc., Two Rivers, Wis.

Features: AC1-0 for 120 v. and AC2-3 for 208-240 v. and both have 24-hour cycles with minimum settings of two hours between on and off operations. Controls permit precooling of rooms and automatic shutoff after day's occupancy period. The 4-pole series of controls can be plugged in and set by anyone who can operate conventional electrical appliance.

circle 142 on reader service card

Two-way radio

Product: Two-way truck/car radio ("Pacer") for servicemen.

Manufacturer: General Electric Co., Lynchburg, Va.

Features: The 15-watt unit operates on 27-50 and 150-174 mc., has 15 tubes



and two transistors. Power supply adaptable to 12 v. negative or positive ground systems to eliminate vibrators. Dimensions are 4 1/4 x 7 1/4 x 12 1/2"; weight, 10 lb.

circle 143 on reader service card

Temperature tester

Product: Temperature tester for automotive airconditioning systems.

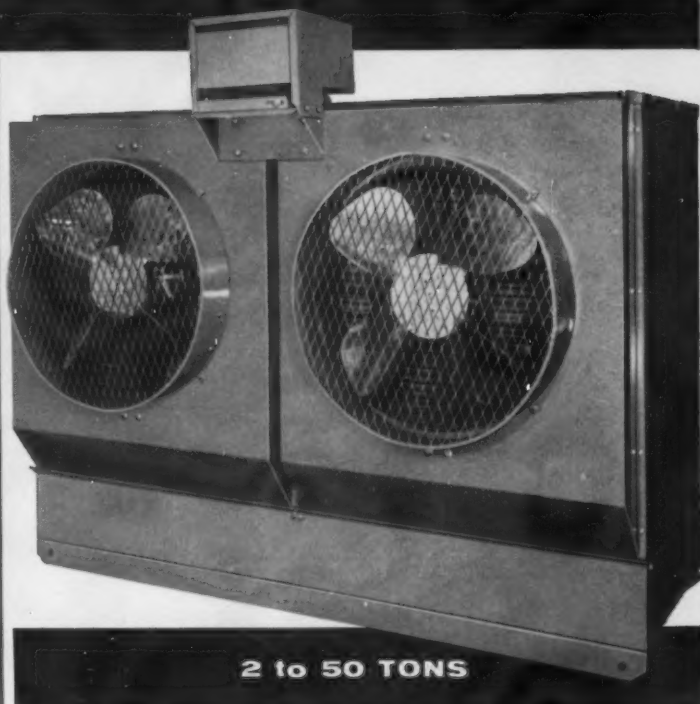
Manufacturer: Simpson Electric Co., Chicago, Ill.

Features: Is recent addition to "Auto Ranger" line of automotive test equipment. With mechanic outside car, temperatures at three different places can be taken—outside air, air conditioner intake air, air discharged into car. Has two scales, wide range of -50 to 100 F and 100 to 250 F, and 15' leads.

circle 144 on reader service card

Continued on page 80

LARKIN WATER SAVERS ARE MONEY MAKERS HERE'S WHY...



Contractor-dealers throughout America are making money with LARKIN WATER SAVER COOLING TOWERS. *Here are 4 reasons why:*

1. QUALITY CONSTRUCTION

Larkin's reputation is staked on every unit. Durably built to last for years.

2. LOW INITIAL COST

You can make lower bids, save customers' money without sacrificing quality or efficiency.

3. RELIABLE PERFORMANCE

The entire wetted surface of redwood is designed for maximum cascading of water, which results in conservative ratings and top performance.

4. EASY SERVICING

Bolted construction permits easy access to all parts. Your profit is not eaten up in excessive service time.

Favored Features

- Wetted surfaces of all-heart redwood nailless interlocked construction. Easily removed.
- 16-gauge steel panels; 12-gauge steel sump.
- Mastic-coated interior. Exterior finished with epon-base, zinc-chromated primer and two coats melamine baked-on enamel.
- All models equipped with hot-dip galvanized propeller fans. Centrifugal blower optional on all models through 20 tons.
- Two and three-ton fan models have direct drive, totally-enclosed motors. All others are belt driven with drip-proof motors.
- Centrifugal blowers have self-aligning graphited bronze sleeve bearings mounted on outside for easy lubrication.
- Belt-driven propeller fans have stainless steel shafts, oil-impregnated bronze bearings with oil line and cup.
- Gravity-type distribution basin—low pumping head over tower.
- Water outlet in sump has large strainer and anti-cavitation plate, easily removed for cleaning.



CAPACITY DATA* 3 GPM/TON

Model	Wet Bulb °F Inlet Water °F Outlet Water °F	78° 95 85
2 WS	TONS	2.0
3 WS	TONS	3.1
5 WS	TONS	5.1
8 WS	TONS	8.1
10 WS	TONS	10.0
16 WS	TONS	16.1
20 WS	TONS	20.0
25 WS	TONS	25.1
30 WS	TONS	32.2
40 WS	TONS	40.0
50 WS	TONS	50.2

*Based on Tower Rejection of 250 BTU/MIN/TON

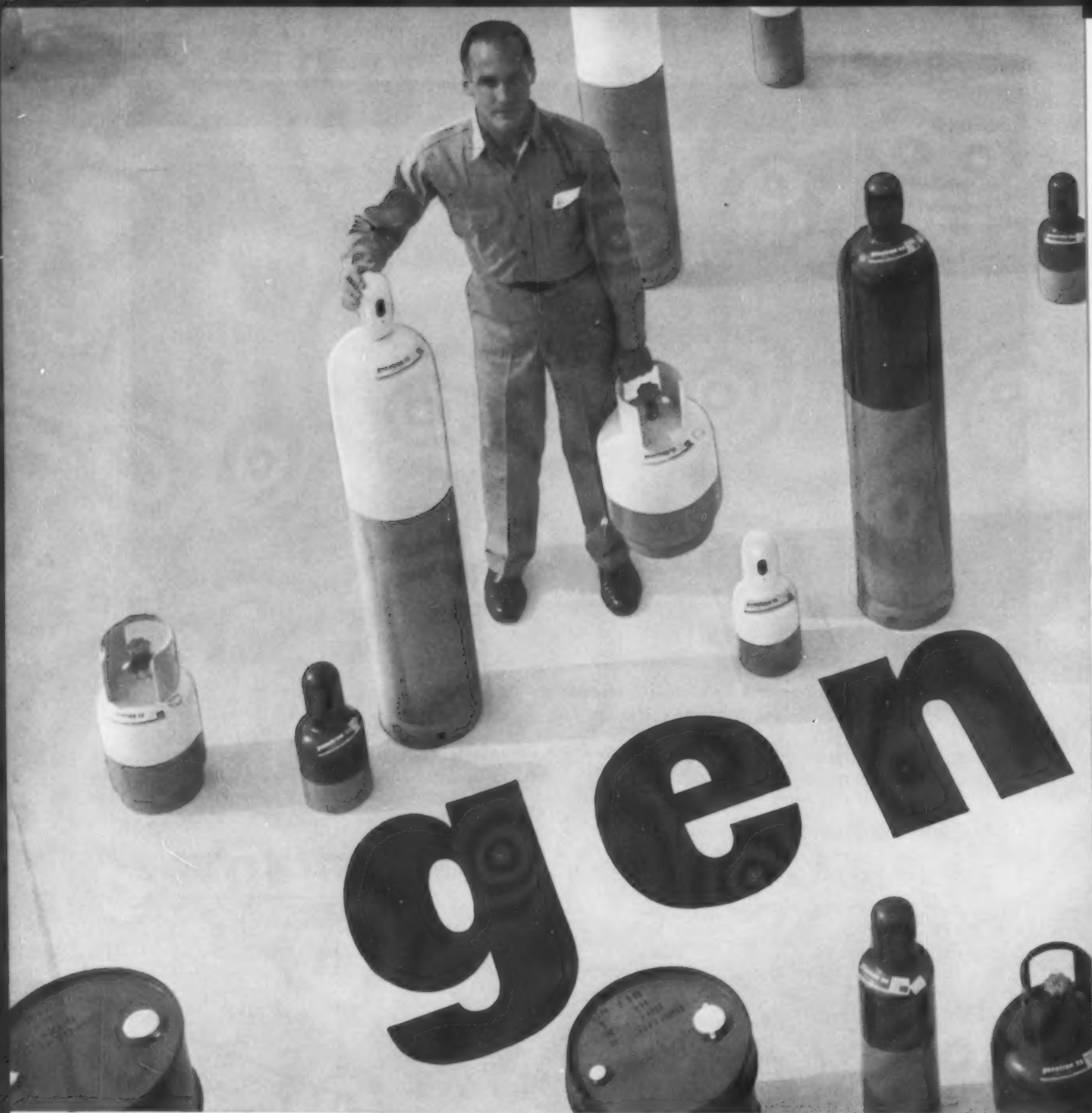
**See Your Wholesaler
Or write for Bulletin 1030-D**

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ATLANTA 1, GEORGIA

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The refrigerants you want...packaged

genetron 11 CCl_3F ORANGE LABEL TRICHLOROMONOFUOROMETHANE

genetron 12 CCl_2F_2 WHITE LABEL DICHLORODIFLUOROMETHANE

genetron 22 CHClF_2 GREEN LABEL MONOCHLORODIFLUOROMETHANE

genetron 113 $\text{C}_2\text{Cl}_3\text{F}_3$ PURPLE LABEL TRICHLOROTRIFLUOROETHANE

genetron 114 $\text{C}_2\text{Cl}_2\text{F}_4$ BLUE LABEL DICHLOROTETRAFLUOROETHANE



the way you want them! Take your pick!

NEW! Get facts about "Genetron" 11 solvent in special pressurized cylinders for cleaning out mildly contaminated systems following burnout.



GENERAL CHEMICAL DIVISION

40 Rector Street, New York 6, N.Y.

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MINIMUM INVENTORY— GENEROUS PROFITS

Service Air Conditioning Controls with
Identical Parts Used in Original Equipment



RBM REPLACEMENT KITS

For the first time, RBM offers kits for direct replacement of the magnetic controls it has engineered and built as original equipment for all major air conditioning manufacturers. Their requirements have been consolidated into a few replacement kits. This, plus same-day-shipment of orders from the Chicago warehouse stocks, keeps your inventory down. Because RBM original equipment and replacement controls are manufactured on high volume production lines, costs are low... and you benefit from the saving in generous profit margins.



Wholesalers... be sure and ask for a free supply of the new RBM pocket size REPLACEMENT KIT BROCHURE. Your customers will appreciate them.

Order your replacement kits from our Chicago Warehouse, 3501 W. Addison, Chicago 18, Illinois.



circle 28 on reader service card

USEFUL Literature

COMPRESSOR SYSTEMS from 1 to 75 hp and for -20 to 45 F rooms are detailed in Bulletin C484 from Kramer Trenton Co. There are many product photographs, a section on the systems' "Thermobank" principle, and one on their 11 operating advantages. Also featured are tables by system number on the "L", "F", and "FX" systems for automatic hot gas defrost and for off-cycle defrosting when evaporators have and do not have heated drain pans. There are drawings and other tables on the firm's condensing units, too.

circle 206 on reader service card

TWO TYPES of winter airconditioner are described in two releases from Mueller Climatrol Div., Worthington Corp. Form A 554 is on the gas fired model, while Form A 555 is on the oil fired models. Both have a product photo and sections and tables on dimensions, specs, and features as well as a cutaway view of the interior of each cooler.

circle 207 on reader service card

SPECIFIERS AND INSTALLERS, says Bulletin 669 from Dean Products, Inc., will prefer "Snopan" and "Colplate" for refrigeration and "Steempan" and "Panelcoil" for warming. The release has product photos and cross-section views and sketches of typical applications on the products as well as a blueprint type sketch. There are sections on how to specify and how the four products are made.

circle 208 on reader service card

THE ANSWER for the smaller freezing operations is the "Freeze-Cel" Model 2735 self-contained double contact food freezer, says Section FSC of Dole Refrigerating Co.'s engineering catalog. Four photos and two pages of specifications highlight the brochure. The specs include freezing unit capacities, electrical characteristics, and data on the refrigeration unit, cabinet freezer section, freezer plate and frame assembly, and hydraulic system.

circle 209 on reader service card

10 PHOTOGRAPHS of close coupled pump motors and a full page of dimensions and drawings highlight Century Electric Co.'s Bulletin 1455. The photos are of the eight types of motors, one on the close coupled pump, and one application photo of a motor in action. The dimension charts list weight, type and frame, width, length, and depth and many other components' sizes and/or capacities.

circle 210 on reader service card

ANSWERING THE DEMAND for a unit air filter containing several desired qualities is the "Dri-Pak" dry-type filter, says Bulletin 228 of American Air Filter Co., Inc. It describes the product's uses, construction, installation, operation, holding frame arrangements, and pre-filters. Also included are dimensional drawings, performance and media data, minimum space requirements, and suggested specifications.

circle 211 on reader service card

MANUAL STARTERS for fractional horsepower motors is the running title that appears throughout Brochure 10-B1 from Furnas Electric Co. The release has sections on special features, applications, construction, and product photos on the motors. Also included are ratings, a table of style numbers and list prices, three other tables on heater coils for the starters, and several engineering drawings.


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Continued on page 76

**"About 65% of my business comes
in through the Yellow Pages!"**

says A. Kurmes, owner, Alex Kurmes Company, W. Orange, N. J.

ALEX KURMES
Company
Established 1937



HEATING CONTRACTORS
Specialist in
GAS HEATING
For Home & Industry
EQUIPMENT AVAILABLE
FOR IMMEDIATE INSTALLATION
PUBLIC SERVICE
APPROVED
EQUIPMENT

ORange 4-0302 25 LIBERTY ST.
WEST ORANGE
If No Answer Call Glens 4-8811
FOR A FREE HEATING SURVEY & COST ANALYSIS

Display ad (reduced) runs under GAS BURNERS—SALES & SERVICE. Call the Yellow Pages man at your Bell Telephone Business Office to plan your program.



"The Yellow Pages pulled such good results last year that it is the only advertising I now use."



"I got two residential attic jobs worth over \$1300 each through my Yellow Pages advertising."



"The Yellow Pages also brought in an industrial air-conditioning job that amounted to over \$3800."



"Display ads in 3 Yellow Pages directories help me reach prospects in my 50-mile selling radius."



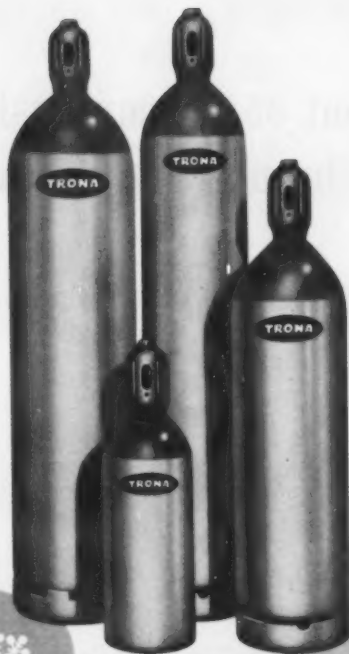
Display this emblem. It builds your business!

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*service...
quality and
experience in*

REFRIGERANTS

*you can
count on!*



TRONA*

TRONA
distributes Pennsalt's

ISOTRON†

Refrigerants in
bulk cylinders and
disposable Charg-A-Can®
containers

ISOTRON-11
ISOTRON-12
ISOTRON-13
ISOTRON-22
ISOTRON-113
ISOTRON-114

Also TRONA METHYL CHLORIDE
& SULFUR DIOXIDE

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EXPORT OFFICE: 99 PARK AVENUE, NEW YORK 16, NEW YORK

How do *you* measure the value of a supplier? ... efficient service to the trade ... uniform quality ... years of experience in supplying the product? Refrigeration wholesalers we do business with say by any standard the answer is contained in the name TRONA—for more than two decades the source of *dependable* refrigerant products and service. Why does Trona serve you better? You get factory-controlled quality, on-time delivery from key distribution points, and a coast-to-coast organization of trained field representatives who know the wholesaler's marketing needs.

*TRADEMARK APCC †ISOTRON IS PENNSALT'S TRADEMARK FOR ITS FLUORINATED HYDROCARBONS.

LOW-COST, EASY TO INSTALL, EASY TO SERVICE LINE

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Tenney

for Back Bars, Reach-Ins,
Direct-Draw Bars,
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TENNEY all-new, all-aluminum mx unit coolers

From 900 to 54,000 BTU

- RUSTPROOF, LIGHTWEIGHT ALUMINUM CASE
- COIL CONSTRUCTION completely non-ferrous
- MINIMUM PRESSURE DROP CIRCUITING, conservative ratings
- AMPLE ROOM FOR TX VALVE
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- 2-WAY MOUNTING standard factory equipment on MX-9 through 17
- QUIET, EFFICIENT fan and motor combinations
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Write for Bulletin 118-58

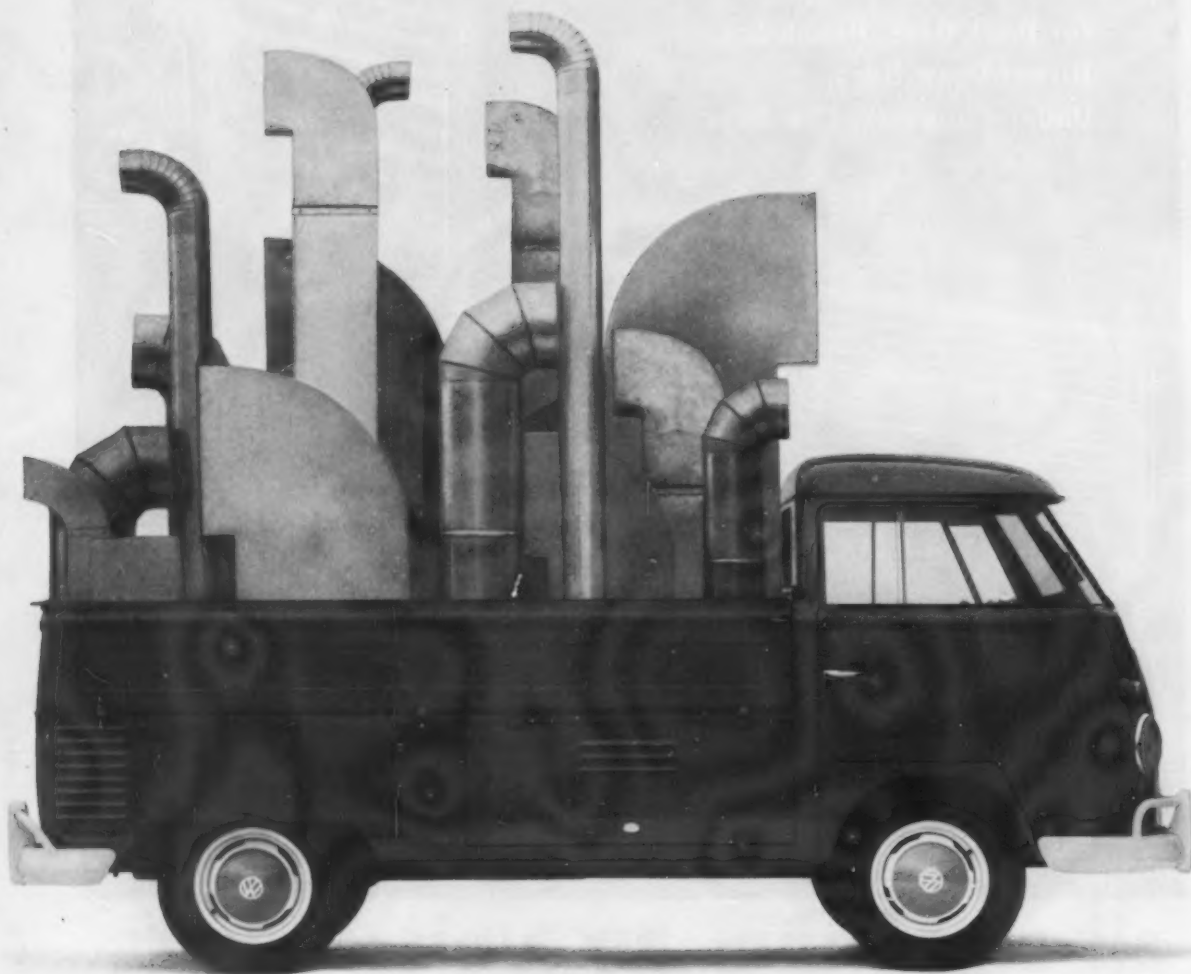
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of Refrigeration and
Environmental Equipment

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PLANTS: UNION, NEW JERSEY AND WILMINGTON, NORTH CAROLINA
circle 77 on reader service card

THE REFRIGERATION & AIRCONDITIONING BUSINESS/JUNE 1963



©1981 VOLKSWAGEN OF AMERICA, INC. *SUGGESTED RETAIL PRICE, \$18,995. MSRP. EXCEPT.

When does it say "Uncle"?

Our truck? Never!
(Well, hardly ever.)

It's funny; a Volkswagen is 3 feet shorter than a half-ton, but you can fit more stuff into it than any half-ton made.

A few extra duct sections? Fine. Our bed is 8½ feet long. 2½ feet more than a half-ton's. (And it's completely flat. No wheel well.)

A few more motors? An extra com-

pressor? Go ahead. Our capacity is 1,764 lbs. Only 240 less than a full ton.

Even loading a VW is different. You get 3 tailgates. Our sides come down just like the rear. You load it like a flat-bed.

You also get a weather-tight compartment for locking up tools at night. And if it rains, there's a tarp and hoops. This is extra. \$85.* (The truck itself is only \$1,895.*)

Consumers Supply in Dallas has 4 VWs. (Their only change was a rack to carry pipe past the top of the cab.)

Consumers Supply gets 31 miles a gallon. Almost all VWs get over 20. Our average is 24.



How about your truck? Does it carry everything a Volkswagen does?

Or go as far on a gallon?

BENDIX-WESTINGHOUSE BACKS YOU UP WITH STRONG FIELD SUPPORT

Certainly, you'll agree. Next to product quality—few factors are more important to a manufacturer of refrigeration equipment than service support from his supplier. Here's the strong field support program Bendix-Westinghouse offers:



▲ **OVER 200 AUTHORIZED WHOLESALERS FROM COAST TO COAST:**

This means—no matter where your customers are located, no matter where your installations are made—an authorized Bendix-Westinghouse wholesaler is close at hand.

▼ **COMPLETE ON-THE-SPOT REPLACEMENT INVENTORIES:** Our nation-wide wholesalers' network maintains complete inventories of motor compressors, condensing units, and replacement electrical components.



▲ **EXPERIENCED ENGINEERING AND APPLICATION ASSISTANCE:**

Available from our regional managers located in major cities throughout the U. S. and Canada. These representatives use modern instruction devices and are well-qualified either to render on-the-job assistance or to conduct educational meetings.

Our field support is just one more reason why Bendix-Westinghouse is your best buy in motor compressors and condensing units. Get full details today.

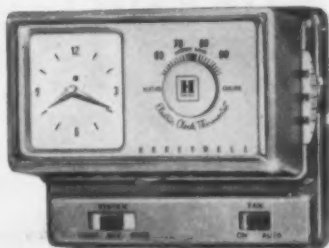
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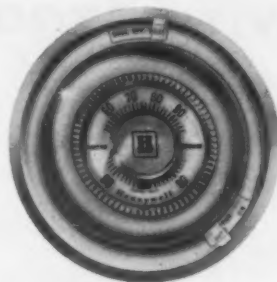
A Division of Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio

Export Sales: Bendix International, 205 E. 42nd St., New York 17, N. Y.; Peter A. Karl, Inc., Union Station Bldg., Utica 2, N. Y.; Sabal-Kielmann, Inc., 15 William St., New York 5, N. Y.

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On every service call . . .
SELL-UP to the Honeywell
Electric Clock Thermostat



On every modernization job . . .
SELL-UP to the Honeywell
Year-Round Thermostat



For all quality new construction . . .
SELL-UP to the Honeywell
Weather Station



For all heat pump installations . . .
SELL-UP to the Honeywell
Indoor-Outdoor Control System

MAKE EVERY AIR CONDITIONING CALL PAY—

Sell
UP!



Honeywell



First in Control
SINCE 1885

circle 53 on reader service card

**NOW...
ONE MAN
CAN
TRACE
CABLES
FAST!**

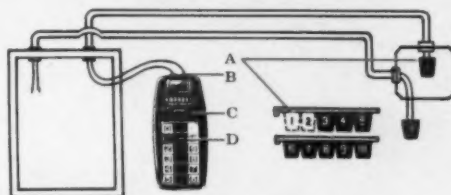


CABLE TRACER

NOW you can trace conductors in cables and conduit—10 times faster than ever before—and leave your helper free to finish other jobs quickly and profitably. A tracing system in itself, revolutionary new CABLE TRACER lets you search—and *unmistakably identify*—up to 10 separate circuits simultaneously, even in the dark and when color coding is absent or obscured by age and dirt. It can also test for opens and shorts.

CABLE TRACER is a completely self-powered precision tool which forever eliminates the need for clumsy buzzers. Designed by the makers of famous AMPROBE snap-around test instruments, new CABLE TRACER is simplicity itself to use. At the press of a button, a number lights up to identify the conductor. What's more, CABLE TRACER will pay for itself in saved labor costs after only three jobs. It is supplied with three test leads and ten Station Blocks in a belt-looped carrying case made of top-grain cowhide leather. Test-try CABLE TRACER today; your AMPROBE Distributor has a live-action demonstrator. Or write for free Catalog Sheet CT-10.

only \$3950



1. Simply plug one end of conductors to be traced into numbered Station Blocks (A).
2. Plug other ends into Receptacle (B) at top of CABLE TRACER.
3. Press Indicator Button (C).
4. The number on CABLE TRACER's Indicator Panel (D) corresponding to the Station Block at the other end of the conductor being traced (No. 1, in this case) *lights up* to provide identification—instantly, clearly, unmistakably! Using all the Station Blocks, ten conductors can be traced at one time.



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Lindley Electric Supply Co., Modern Light Supply Co.
Penn. Electric Supply, Philadelphia Electronics, Inc.
Silver Electric Service Co., Ross Electric Supply
Co., Silver Spring, Md.
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Electric Supply, C. H. McElectric Supply Co., Doubleday
Electric Co., General Electric Supply Co., Graybar
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Peterson Industries, Southern Electric Supply, Stand-
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Nunn Electric Supply Corp., Odessa, Superior Electric
Supply Co., Rockwell Electric Co., San Antonio, Tex.
Industrial Supply Co., Inc., Waco, Texas
Texarkana, Wholesale Electric Supply, Waco, Watts
Electric Co., UTAH, Ogden, Five Points Electric Supply
Wholesale Wholesale Electric, Brem, Roberts Electric
Wholesale Supply, Salt Lake City, Utah
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ville, Wind Electric, Dominion Electric Supply
Wilmington, Western Electric Supply
Electric Co. Inc., Westinghouse Electric Supply Co.
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Tacoma, Graybar Electric Co. Inc., Love Electric Co.
Walla Walla, Miller Supply Inc., Yakima, WEST VIRGINIA
B Supply Co., Stussar Electric Co., WEST VIRGINIA
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LET'S TALK *Business*

The parable of the left-handed widget

ONCE UPON A TIME there was a contractor-dealer who repeatedly had difficulty making a certain connection. This connection was not only a source of aggravation and bruised knuckles but it slowed down installations, resulting in higher labor costs.

Being an enterprising and alert fellow, he figured how to fashion a tool that would help him make the connection with a minimum of time and labor. And so the left-handed widget was born.

It worked beautifully. Its lines were clean, it was simple and functional since all it was supposed to do was help make the difficult connection.

The contractor-dealer showed the widget at his association meeting. Other contractor-dealers wanted to buy this tool. One aggressive fellow who realized the widget's advantages wanted to buy it in quantity and sell it to all installing contractors.

Soon the inventive contractor was manufacturing left-handed widgets and selling them at a low price with a fair profit for himself and the wholesaler.

Business was good, but he thought he could do better. He did some field research and found many people who told him to increase the size of the shank so the widget also could be used for a crowbar. By threading one end and adding a relatively inexpensive chuck, others pointed out, the tool could feature an extended screwdriver. He was told the tool should be chromeplated to add style and sales appeal.

To meet these many demands, he re-invested all his profits, plus all the money he could borrow, in a new plant with new machinery and new tooling. Production went up, but so did costs and selling prices. Burdens and overheads increased. In fact everything went up — except sales. They came down, way down.

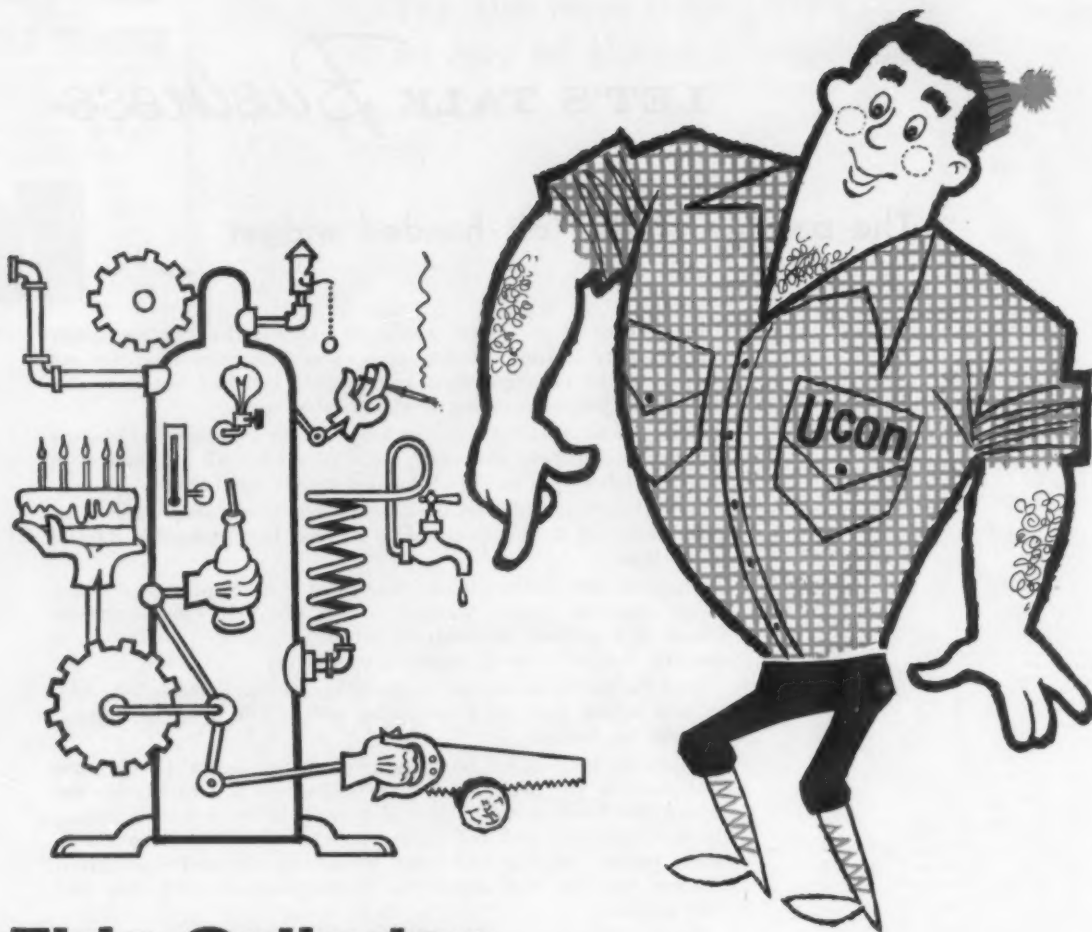
Being an enterprising manufacturer, he called in a management consultant. The consultant in turn secured the services of a national market research organization, which made a survey in depth to find what was wrong.

The report: chrome is pretty, but not necessary; the screwdriver feature is a conversation piece, but a standard screwdriver could do a better job; the crowbar feature is a sales gimmick, but it scars the chrome finish and is not strong enough to do very heavy work. In fact, the report indicated, none of the added features are worth the added costs.

The recommendation: there is a real need for a tool designed specifically to help make the difficult connection. It should have clean lines, be simple and functional. So the left-handed widget was reborn.

If the story sounds familiar, it's because it is. Many manufacturers have followed this same cycle at the insistence of their contractors and wholesalers.

Jack Robinson

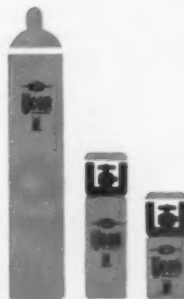


This Cylinder Does Everything...

... stands right side up, upside down, discharges top, bottom and middle, carries itself, heats soup, grinds nuts, and transports you to and from the customer via a detachable propulsion system. Available in 27 sizes, it's the perfect answer to your every oddball requirement.

But for every day THESE THREE WILL SUFFICE...

Make no mistake about it—by SUFFICE, we mean cover the ball park. In one ... two ... *three* Ucon® Refrigerant Cylinders you'll find every important packaging convenience, every cylinder size you need, *and*—you can always be sure your wholesaler will have what you need, *when you need it*. Helpful technical assistance, too, is yours for the asking with UCON Refrigerants. Conclusion:



*For the most compact and convenient line of refrigerants—
See Your UCON Refrigerants Wholesaler*



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GOOD SALESMANSHIP DOES PAY! Just as the copy for this article was being sent to the printer we learned that the food market owner who cooperated with us in this project had signed the order for airconditioning his store and made the downpayment. The installation will have been completed by the time you read this. Read the article through, then ask yourself which contractor he bought from. You'll find the answer at the bottom of page 45 — but no fair peeking.



~~I tried to buy~~ **AIRCONDITIONING** for a store

GORDON ANDERSON, assistant editor

FORGET FOR A MINUTE that you're a contractor. Put yourself in the customer's shoes.

You want to buy airconditioning for your small retail store. You don't have a brother-in-law or a friend in the business, so you turn to the yellow pages of your telephone book. You call several contractor-dealers because you are impressed with their display advertisements or because they are listed under brand names you recognize. You ask them to come out and tell you what you need.

That's when the confusion — and the disillusionment — starts. That's when you find out that some of them aren't even interested enough to show up. That's when you learn that recommended capacities and quoted prices range all over the map, that brand names apparently don't mean a thing.

You get a lot of conversation but surprisingly little specific information.

You realize that cooling your little store isn't a big engineering project like airconditioning the Empire State Building. But you're going to spend between

\$1000 and \$3000 of your hard-earned money for this installation, and you figure you're entitled to find out just what you're going to get for it.

But do you? Just look at what happened when I tried to buy airconditioning for a store.

We carried out this field study in a neighborhood grocery operated by two brothers in a large city. The 11-year-old building is practically next door to a small shopping center which has two airconditioned supermarkets. The grocery already competes to a great extent with these supers by offering personal service and a 12-hour day. But to get on a more equal footing with the big stores, the brothers were planning to buy airconditioning this year.

The store occupies a 1-story brick building facing east. It has an 8 x 21' plate glass window in front. The one customer entrance faces southeast. The sales area is 50 x 30', the rear service area 30 x 30'. The flat roof is insulated with $\frac{1}{2}$ " felt and several coats of tar and

Continued on page 40

I TRIED TO BUY

roofing paper. The store is wired for single-phase power but 3-phase is available.

The situation was a natural for us to observe. I posed as one of the owners so I could see and hear all that went on as each contractor tried to make the sale. One of the two brothers was always with me when the contractors came to the store.

I phoned seven contractors, all handling well-known, top-quality national brands of commercial package airconditioning. We didn't want to experiment with the part-time dealer or the off brand.

Two of the contractors I called never even showed up! And one of them is the only local dealer listed for one of the top brands.

I made it clear to each of the five who did come out that we were consulting other contractors, too, so each knew he'd have to put forth a lively selling effort to get this business.

I didn't ask any of the contractors leading questions. In this way I could really see what kind of salesmen they were. Of course, I didn't stand around mute. I answered every question put to me as completely as I could, often turning to one of the real owners for help on some answers I didn't have.

After all the contractors had called, and after all the proposals were in, I asked the real owner of the store to tell me what he had learned from this experiment, what his impressions and reactions were.

Here was a typical customer trying to make some sense out of the actions and attitudes of a representative group of airconditioning contractors. And this is what he had to say:

"I got the feeling that most of the men who called on me really didn't know their business. If they did, they certainly failed miserably to impress this fact on me.

"Most of them seemed primarily concerned with feeling me out to see how much I figured on spending. But if I spend X number of dollars and the system doesn't work properly, what good is it to go only by price? Besides, how do I know what's the best system at the best price? That's why I called them in the first place. But only one contractor presented his proposal so that I knew exactly what I would be buying, and why.

"Most of them had a take-it-or-leave-it attitude. Only a couple handled the sale in a way that gave me any reason for wanting to buy from them.

"Some of the men didn't even use common sense or common courtesy. Some were careless about keeping their appointments. Others insisted on interrupting me, without invitation or notice, just when I was busiest. One guy was so persistent I got sick and tired of seeing his face around the store. He kept coming back for no apparent reason, even though I told him he should keep in touch by phone like the others."

As an installing contractor there are some important lessons for you here. One is that the price you offer isn't nearly as important as the impression you make on the prospect.

IF you go about your job in a businesslike manner ...

IF you convince the prospect that you know what you're doing ...

IF you carefully analyze his job and recommend a sensible solution for it ...

IF you quote him a firm price and make sure he understands what it covers ...

IF you promote the merits of the brand of equipment you specify and the stature and capabilities of your own organization ...

And **IF** you wrap all of this up in a simple but complete proposal ... you have gone a long way toward making the sale.

CONTRACTOR A

First Call: This contractor didn't seem to want to bother to come out when I phoned him, because the store is across town from his office. He asked the size of the store, then said one of his salesmen who covers that side of town would call for an appointment.

Five days later, an estimator came — without calling for an appointment. As a result, he caught us when the store was crowded. He spent almost the entire time making a careful sketch of the store. It included food gondolas, window area, lights, and size and placement of coolers. He was businesslike and efficient. Just before leaving, he said I should have an air-cooled unit because water is expensive. He also said he would be back within the next three days with an estimate.

Followup: The estimator came back 10 days afterward. He was again unlucky, because I told him it was our busiest day of the week. "Oh, well, then, I'll call you some time later this month and bring our bid. We can do a good job for you."

I saw him again six days after that call. He didn't have the proposal. "We just couldn't seem to get around to making it up," he said. I asked him for a rough estimate of the cost and he said, "Oh, about \$3000, I'd guess." He said a 7½-hp unit was probably the size I needed but didn't mention any brand. I told him his figure seemed high and anyway I was still shopping around. "I thought you had just about made up your mind," he said. "Well, give me a call if you're interested."

CONTRACTOR B

First Call: Once he arrived, 20 minutes late, this salesman first made a detailed sketch of the sales area on graph paper. I noticed his measurements were off 200 sq.ft. He asked the height of the ceiling and if the roof were flat. He spent almost a half hour making his drawing, interrupting only to comment on the quality of the food cases. He looked at three of the four refrigeration compressors and at the water drain. Then, without warning, he said, "Excuse me," and used the lavatory without asking if it were alright to do so. Next, seeing coffee-making facilities, he asked for a cup of coffee although I wasn't drinking any. When he offered to pour it himself, I gave him a cup. He didn't thank me.

He said he recommended a 3-hp unit for cooling only the sales area and a 5-hp unit for the entire store, even though he didn't measure the size of the rear service area. A 5-hp unit would cost me about \$200 more, he said, "but then you don't want the meat to spoil back there, do you?" After asking in which direction the store faced and where the main water supply line was, he said he would compute a heat load calculation and call me the next day. He never mentioned the type of unit he was considering or the brands his company carried.

Followup: The salesman came back the next day and left two folders of product literature which showed me for the first time what type of cooling (water-cooled) and what brand I would get from him. He also left a quotation written on paper torn from a notebook. It listed a price of \$855 for a 3-hp unit and \$1092 for a 5-hp unit. Both included freight, 5-year warranty, water regulating valve, and 60-day service. What the warranty or service covered, the quotation didn't say.

The next time he came, he brought an electrician who checked the power. Both said they would come back again, after checking with the utility about getting 3-phase power into the store. An their way out the salesman said, "Only after I check on the power will I feel I can give you the complete price." I gather the first prices he had quoted were somehow incomplete.

On his fourth call he came without the electrician, without first phoning me, and without the utility report. He also didn't bring the promised "complete" proposal, but said he would call me "sometime in the next week or so" and bring it then.

By his fifth visit I felt he owned the store. He brought the proposal with a price of \$1707 for a 5-hp water-cooled unit. When I asked him why it was \$600 more than the price he had given me before, he said, "That didn't include any installation or wiring charges. But this figure is the absolute complete and final one. By the way, I can't remember if I left you any literature before." He had, but I told him I, too, had a bad memory. He went to get some from his car, but came

Continued on page 42

Airconditioning contractors are lousy salesmen!

Here's a quick rundown of the results of this experiment. You'll find full details in the call-by-call reports, and in the two tables comparing various aspects of the sale.

Try to figure out how your organization would have stacked up against these. Be honest about it. Then do whatever you feel necessary to bolster the weaknesses you find.

Use this object lesson to make sure your men make the best possible impression on every prospect they call on. It will pay off in sales, as it did in this case.

TWO CONTRACTORS I CALLED NEVER SHOWED UP!

Four of the five who did come to the store eventually submitted a proposal of some sort, but only one was really complete. One was just scribbled on a slip of scratch paper.

Just one made any attempt to explain his proposal to be sure I understood what I would be getting and why.

Three contractors didn't even bother to measure or sketch the store.

All contractors quoted capacities and prices, but they varied widely and unreasonably. Capacities ranged from 3-hp to 7½-hp; prices from \$855 to "about \$3000."

Only one contractor offered any kind of a product story to capitalize on the well-known brand name of the equipment he specified.

Only one made any real effort to sell me on the reputation or facilities of his own company.

Not a single contractor even mentioned the Unitary Air-Conditioner Certification Program of Air-Conditioning and Refrigeration Institute, although every manufacturer represented is cooperating in that program and contributing to its support. And despite the fact that one prime purpose of the program is to give an extra selling edge to the contractor-dealer handling a certified line.

Two contractors were rude and inconsiderate when in the store. Two others didn't have the courtesy to call me before they came out, even though I had requested that they do so.

AND ONLY ONE CONTRACTOR REALLY ASKED FOR THE ORDER!

I TRIED TO BUY

back empty-handed. "I guess I forgot to bring some with me this trip," he said.

The \$1707 was payable in three installments — one-third down, one-third on delivery, one-third 30 days after installation. The bid included a 5-year warranty and 60-day service. A week later, he came back again — principally, it seemed, to leave more literature. He told me what a fine store I had, looked at the refrigeration equipment again, and left without doing or saying anything else.

CONTRACTOR C

First Call: When I phoned him, the contractor himself said he would be out on a certain day "sometime between 9 and 11 in the morning." He hadn't showed up at 11 a.m., so I called his office. A girl said she was sure he was on his way. He came at 11:30 a.m. and spent the first part of his visit sketching and measuring the store, including the large front window. He didn't ask about building insulation or about power supply.

After 30 minutes, he told me why I didn't want a water-cooled unit and how he would install air-cooled airconditioning. A water-cooled unit, he said, is cheaper to buy, but it would increase my water bill \$100 a year and I would make up the difference between the two types in three or four years. He proposed a ceiling-hung fan-coil unit with a remote condensing unit outside the rear of the store.

"I think Brand C is the one for you. I know of a good used unit on which I'll give you a year's warranty instead of our usual 30 days on secondhand units. This brand and Brand D are the two best on the market," he said, and proceeded to tell me how great Brand D is and what a wonderful setup his wholesaler has who distributes D. He seemed to forget he had recommended C.

I told him to figure the cost of both the new and the used equipment. He seemed reluctant to do so, but said he would come back in a couple of days with the proposals.

Followup: Two days after his first call, the owner brought a proposal which called for 5-ton air-cooled airconditioning. The cost for the used equipment was \$1489, while the new equipment was \$2176. He said this price presumed use of 3-phase power, but said he would call the utility the next day to make sure it was available.

The proposal was complete in every respect, and was neatly bound in an individualized folder. It included a heat load calculation of 60,123 Btuh, showing heat gain from every possible source. It showed how carefully he had measured the store. It also in-

The sloppy sales practices

CONTRACTOR	WHO MADE THE CALL?	DID HE FOLLOW UP?	HOW MANY CALLS DID HE MAKE?
A	ESTIMATOR	YES	3
B	SALESMAN	YES	5
C	OWNER	YES	3
D	CHIEF ESTIMATOR	NO	1
E	OWNER	YES	2
F	THIS		
G	THIS		

cluded several brochures of literature on the new and used units and he had redlined the pertinent information in each brochure. He made certain I understood the proposal, carefully going over each item with me and completely answering all my questions.

The last sheet of the proposal included a long paragraph telling me how able the contractor's personnel, financing, installation, and service departments were. Also attached were sheets listing 269 installations made by this contractor, calling my attention to the many repeat customers. The contractor talked with pride about these customers, adding, "I hope to be able to add your name to this list, too."

He called on me the next weekend as he had promised. I told him I was very busy and he apologized for bothering me. But he said he would phone the following week to find out if I had made a decision. I told him I was impressed with his selling effort. "I'm glad to hear that — we try to do the best job in every way we know how. How about it? When can we start to work here?" he said, and offered me a pen. I told him I still had a couple of contractors to bid on the job. He gave me his calling card. "Here, whenever you're ready, any time of the day or night, call me at home if I'm not in the office. I really want the chance to show you what a solid job we can do for you."

of commercial airconditioning contractors shows up clearly here

DID HE SKETCH OR MEASURE STORE?	DID HE ASK ABOUT BUILDING INSULATION?	DID HE MENTION BRAND NAMES?	DID HE TELL A PRODUCT STORY?	DID HE LEAVE ANY PRODUCT LITERATURE?	DID HE DISCUSS FINANCING?	DID HE PROMOTE HIS FIRM'S FACILITIES AND REPUTATION?	DID HE SUBMIT QUOTATION IN PERSON?	DID HE EXPLAIN QUOTATION?	DID HE ASK FOR THE ORDER?
NO	NO	NO	NO	NO	NO	NO	YES	NO	NO
YES	NO	YES	NO	YES	NO	NO	YES	NO	NO
YES	NO	YES	YES	YES	NO	YES	YES	YES	YES
NO	YES	NO	NO	NO	YES	NO	YES	NO	NO
NO	NO	NO	NO	NO	YES	NO	YES	NO	NO

CONTRACTOR NEVER SHOWED UP

CONTRACTOR NEVER SHOWED UP

CONTRACTOR D

First Call: A nattily-dressed fellow who introduced himself as the contractor's chief estimator, came right to the rear of the store and right to the point. He said I needed a 5-hp water-cooled system because water is cheaper and because this type of system is \$150 cheaper than an air-cooled unit. He went to the sink and ran the cold water, then looked at the one ½-hp and three ¾-hp compressors powering the refrigeration equipment. When I told him I didn't know their sizes, he said, "I can't seem to make out what horsepower these are," and went to get a flashlight to check them. The ratings were clearly marked on each compressor's nameplate.

Then he found out the store had only single-phase power and said that if the utility would OK 3-phase power, the cooling would cost me \$40 less. He wandered about the store, ran the cold water again, looked under the sink, and asked the size of the area to be cooled. He also asked about roof insulation. Then, without asking if he could smoke, lit a big, black cigar 5' from where fresh meat was being cut.

He sloughed over the brand his company sells even though it is nationally-recognized as one of the top

ones. He volunteered that I could finance the unit: "We usually take 10% down and the rest in monthly payments." He didn't say how many months. "Of course, we have a 5-year warranty on the compressor and one year on service," he said, but didn't specify what this service covered.

Finally, he showed me where the airconditioner should go, but didn't say how or why. Then he wrote a column of figures on a scratch pad. He said they added up to \$1350, or \$1310 if 3-phase power could be used. When I asked to see the list of figures, he said, "Here, I'll give it to you in simple English; and besides, I need a copy so I'll remember what I told you — don't want to cheat you, you know," and laughed. When I said I wanted something in writing, he wrote a brief job description and price, again on scrap paper. He signed it, adding the firm's phone number.

Just before he left, he showed me a picture of the unit he said I needed, but didn't go into what it would do. "I'll call you in a few weeks and see if you're interested," he said. Then he shook hands and thanked me for calling him. He forgot my name.

Followup: None.

Continued on page 44

I TRIED TO BUY

1-5/8 HP
A.C. unit complete
with duct work
discharge grid - Blowing
Room - 1 year service
5 year warranty on
compressor
1350 Inc. Tax
Amphibious Power -
3 other Power No. 2 Ltd



If you were the customer, which proposal would you pick?

Contractor	Form of Quotation	Heat Load Calculation	Type of Unit	Capacity of Unit	Type of Compressor Warranty	Type of System Warranty	Quoted Price
A	Verbal	None	Air-cooled package unit	7½ hp	Not indicated	Not indicated	About \$3000
B	1-page proposal form in triplicate*	None	Water-cooled package unit	5 hp*	5 years	1 year on parts plus 60 days service	\$1707*
C	Complete proposal in personalized presentation folder	Complete	Air-cooled split unit (Condensing unit on exterior pad)	5 tons	5 years*	1 year on parts	\$2176**
D	Handwritten on slip of scratch paper	None	Water-cooled package unit with ductwork	5 hp	5 years	1 year service	\$1310***
E	Carbon copy of 3-page proposal typed on letterhead	Partial	Air-cooled split unit (rooftop condensing unit)	5 tons	5 years	1 year on parts plus 3 preventive maintenance checks	\$1696
	*Initial quotation written in pencil on ruled note paper			*3-hp unit recommended in initial quotation	*1 year on used equipment in alternate proposal		*\$855 given in initial quotation **\$1489 for used equipment in alternate proposal ***\$1350 with single-phase power

LOOK AT THE CONTRAST between these two proposals! Both were submitted to the customer by large, well established, responsible contractors representing top name brands of equipment. One was scribbled on a scratch pad. The brand of equipment and the salesman's name and phone number have been censored. The other, bound in an inexpensive but personalized folder, contained: a complete proposal neatly typed on company letterhead; a detailed cooling load estimate on a standard form; two product brochures; a simple diagram of the store, showing location of equipment and piping; a "comfort guarantee" form provided by the manufacturer; and a lengthy list of satisfied customers. The result of this thorough sales job — one more satisfied customer!

CONTRACTOR E

First Call: This contractor's representative was nearly an hour late for his appointment but didn't apologize or explain why. He asked the size of the area to be cooled then looked at the fusebox, commenting that it appeared to be wired for only single-phase power.

Why I called his company seemed very important to him. When I told him, it made him happy, he said, "because if you had called a manufacturer like A or B (two national brands), I'd have to recommend them. Now I know I can give you the best deal and not play any favorites."

He walked around the store, glanced at the refrigeration compressors, and scribbled on a pad. He came back and said, "I'll see that you get a proposal sometime next week." I got no inkling of what kind of cooling he thought I needed, nor did he tell me what brands he sold. He left his calling card on a counter, not with me, and I found it 20 minutes after he left, on the floor.

He was the owner of the company.

Followup: Three days later the same man showed me where the airconditioner would go and left a formal proposal, neatly typed in duplicate. It quoted a 5-ton air-cooled unit, with the fan-coil unit to be

hung from the ceiling in the rear service area. The condensing unit would be roof-mounted. The quoted price was \$1696 and included a 5-year warranty on "this equipment" and a 1-year warranty on service that included three preventive maintenance checkups. A very abbreviated heat load calculation was made in the proposal, but didn't include total Btuh, total area to be cooled, or all heat sources.

Terms of payment were one-third on signing the estimate, one-third on installation, and one-third 30 days after installation. He said, "the manufacturer, of course, will arrange financing for you," but didn't elaborate.

CONTRACTOR F

An office girl answered the telephone when I called this contractor, the only listed local dealer of a major manufacturer. She said no one was in, but that she would have a salesman phone me back "the first thing."

When I hadn't heard from anyone four days later, I gave the contractor the benefit of the doubt that a salesman hadn't gotten my first message. So I called again. The same girl said, "I don't understand it. I gave a salesman your message. But I'll see to it that he gets it again and have him call you."

He didn't call.

CONTRACTOR G

When I telephoned this company the man who answered said he was busy and would call me back. He did call — an hour later — and asked how big and where the store was. When I told him, he said he would call again before he or someone else came to see me.

I never heard from this contractor again.

HERE'S THE PROOF

... that good salesmanship does pay. Contractor C got the order, even though his price was the *highest* firm price received — \$866 above the lowest price quoted for comparable equipment. In the customer's own words this contractor got it because "he's the only one who did a really effective selling job and who presented his proposal so that I knew exactly what I was buying and why."

In direct contrast to this performance, Contractor F made his *first* contact with the customer by telephoning him a day after the order was signed — more than three weeks after the customer had called him. Expressing surprise that the customer had bought, he said: "That's just my luck. I waste a lot of time on the ones that are just shopping, and I don't go out on the ones that are really going to buy." ♦



FROM
SHOP

TO
FIELD



Direct radio communication provides speedy service

IT GETS PRETTY HOT out West Texas way. And when an airconditioner breaks down, it's mighty important that the customer doesn't have long to wait before it's repaired. Neill's & Co. of Midland gets a serviceman on the job with lightning speed with its 2-way radio.

"Radio is the most valuable tool our trucks carry," says owner Ernest Neill. "It means that each man can handle two or three extra calls every day."

Each serviceman gets five or six job orders every morning and when these are completed, he calls in for more work — often an emergency. He can reach the trouble spot in minutes, providing prompt service and saving mileage. This quick-as-a-wink method is good advertising for this mechanical contractor. And it has led to increased business.

"Before we used 2-way radio, servicemen returned to the office after they finished their morning calls," Neill explains. "When we sent them out again, they'd often go to the same area they just passed through or had worked in earlier."

Gasoline bills have been reduced. Neill says he doesn't have an exact breakdown on expenses, but he does know gas bills are about 15% less than before radios were put in use. Seven of the contractor's 17 vehicles, including the three service trucks, are radio-equipped.

Radio helps out when a serviceman runs up against

a problem out on the job. Men can call either Neill in his car or at the office or refrigeration foreman Harold Clayborn in his truck for advice. Information from diagrams and files in Neill's office can be relayed via radio.

If a serviceman is missing a part or tool on a job, he simply phones into the office. A nearby truck or one from the office is dispatched immediately and the serviceman doesn't lose valuable working time returning to the office for what he needs.

Even if a service truck develops mechanical trouble or has a flat tire, the serviceman has no worries. Help is just minutes away via the 2-way radio. Without it, his usefulness as a serviceman could be out of commission for hours.

Neill emphasizes that before he added radios, he lost efficient contact with the trucks once they left the shop. "Now I know what's going on at all time and so do the drivers," he says.

A Motorola "Private-Line" radio system is used. It cuts down interference on the firm's assigned frequency. Neill's main office is the controlling point for radio operations. With his 80' high antenna, Neill can reach his men within a 30-mile area.

"Radio is an invaluable and economical business tool. I wonder how we did without it in the past," Neill concludes. ♦

THERE ARE LOTS OF REFRIGERATION DRIERS that control moisture, remove acid and filter solids . . . none of them do these things better than the ANSUL T-FLO DRIER. And . . . there's only one drier, the ANSUL T-FLO that can be replaced as quickly and easily as changing a light bulb . . . that offers the unique possibilities for manifolding . . . that can be connected directly to a moisture indicator without breaking the line. The ANSUL T-FLO DRIER was developed by refrigeration people with imagination . . . for refrigeration people with problems. They're available from refrigeration wholesalers everywhere.

ANSUL

ansul t-flo drier



ANSUL CHEMICAL COMPANY
MARINETTE, WISCONSIN
Exclusive sales agents
for UCON brand refrigerants,
manufacturers of
refrigeration products,
fire extinguishing equipment
and industrial chemicals.

circle 14 on reader service card

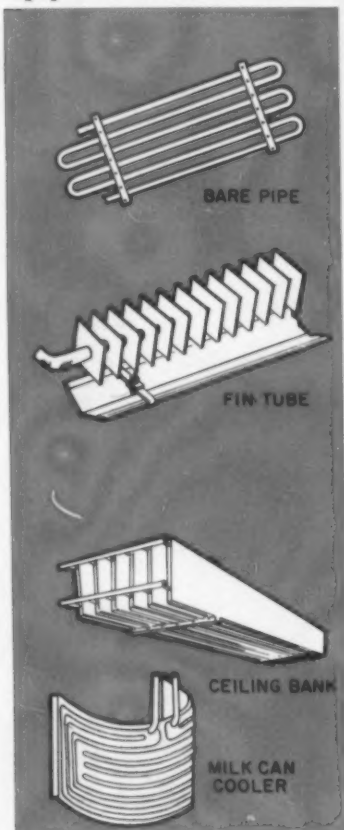
A quick look at what you can get in REFRIGERATION COILS

YOU COULD WRITE A BOOK on the subject of coils that are available for commercial and industrial refrigeration applications.

In fact, some manufacturers have. One catalog, for example, lists model recommendations for more than a thousand specific applications. Another manufacturer has published a 40-page engineering manual containing no product information but crammed full of data aimed at simplifying load calculations and equipment selection for the installing contractor.

Material like this is invaluable even to the most experienced contractor, for seldom are two jobs exactly alike. But to serve as a guide to the less experienced, we present here a brief rundown of the basic types of coils available, the jobs they are designed to do, their advantages and disadvantages.

If you need more specific information, consult your local refrigeration wholesaler. He will be glad to help you. Or contact directly the manufacturer of the equipment you plan to use.



You can get gravity coils in two basic types — bare pipe or fin tube. You can have them made up, or make them up yourself, in any size you need.

The bare pipe coil was the first one used for refrigeration work, but it has been largely replaced by the fin tube coil or one of the many types of forced air coils. It was most widely used back when ammonia was the most common refrigerant. It still is used for some ammonia systems, particularly for dead storage where there is little traffic in or out of the refrigerated area. It also is used in some industrial processing.

The fin tube coil, which increased the heat transfer surface of the bare pipe, began to be used extensively in the early days of low pressure refrigeration. Since about 1934, however, the trend has been toward the forced air coil. Despite this, in recent years some application engineers have returned to the use of gravity coils in an effort to increase humidity in cut meat coolers and other applications where a drying effect is undesirable.

Some inherent problems of gravity coils are slow pull-down, poor air distribution, and wide temperature differential between ceiling and floor.

Plate coils

Plate coils refrigerate either by gravity or by contact. They are most commonly used for low temperature applications and for liquid chilling.

Low temperature uses include locker plants, ice cream hardening rooms, food freezing cabinets, truck and transport refrigeration, and sub-zero cabinets for industrial processing. Filled with eutectic solution these plates provide holdover capacity for periods when direct refrigeration cannot be provided.

As liquid chillers you can use them for cooling beverages, or solutions used in industrial processing. You can do this either by building the tank out of plate coil surface, or by immersing the plates in the liquid.

Plate coils can be fabricated by the manufacturers in practically any shape or form to fit a virtually limitless variety of specialized applications, such as cold pans for food service installations, U-shaped jackets for cooling milk cans, or V-shaped troughs for such industrial processes as varnish dipping.

Forced air coils

Here again there are two basic types — those using propeller fans and those using squirrel cage fans.

Propeller fan coils are designed for free-blow applications. Don't use them with ductwork, because they are not capable of working against static pressure.

The standard unit cooler, prototype of all propeller fan coils, has been the workhorse of the industry. For years it was by far the most widely used type of coil for food storage applications, despite its relatively low surface area and high air velocity. This coil has fast pull-down, but spotty and drafty air distribution.

Beginning in the early 1950's, it began to be replaced by the half-round coil, which increased the surface in relation to velocity and consequently tended to minimize the drying effect. This in turn led to the use of the full radial coil, which was the first of the high surface, low velocity types.

Recently a new type of coil has been put on the market for such applications as fresh produce and meat storage, or for meat cutting rooms. Specifically designed for high surface and low velocity, this coil is fast becoming known in the trade as the "happy medium" (see Applications Manual, October 1960 issue) because it has all of the advantages and none of the disadvantages of both gravity coils and the older types of forced air coils.

Squirrel cage fan coils are the logical choice where ductwork is involved or for any application where air must be delivered silently and against some restriction. This type of fan delivers less cfm per horsepower than the propeller fan.

The standard product cooler is the most commonly used coil of this type. You can get it in either floor-mounted or ceiling-mounted models. If space is a problem, you can mount the floor model on wall brackets at ceiling level (see Applications Manual, April 1961 issue).

Happy medium coils also are made with squirrel cage blowers. These units have a fan at only one end. They are especially suitable for any application requiring high humidity and low air velocity.

Automatic defrost coils

Defrosting refrigeration coils has always been a problem. The lower the temperature, the greater the problem.

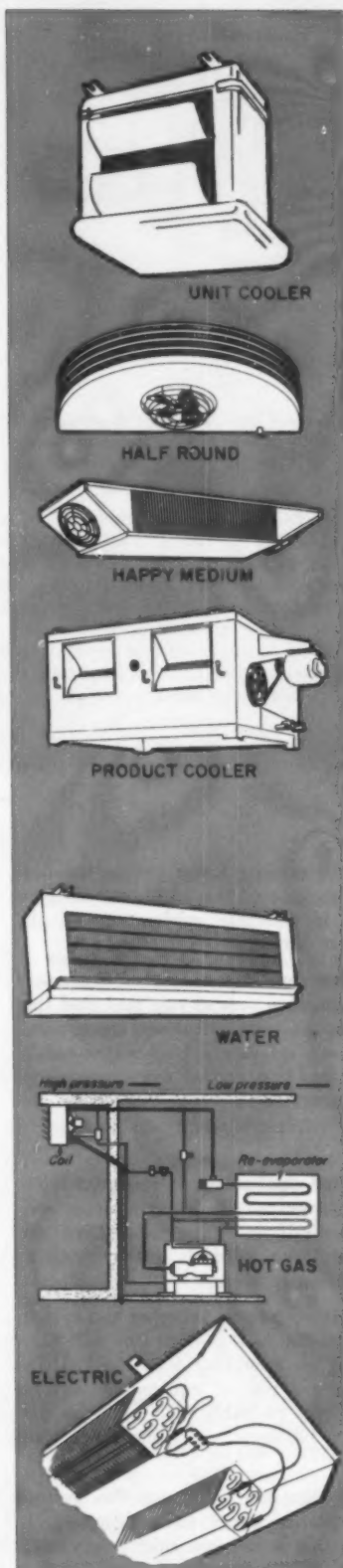
On gravity coils this is a manual operation. The operator must either scrape the ice off, or shut down the system long enough for the coil to warm up and loosen the frost and ice so it melts and drops off. Many plate coils are defrosted this same way, although some are provided by the manufacturer with hot gas defrost. The time involved in manual defrost makes it difficult to hold constant temperature in the room.

One of the earliest methods of defrosting forced air coils was water defrost. Tap water is flushed over the coil surface to melt the frost, caught in a drip pan beneath the coil, and drained off. Water defrost coils usually are controlled manually, but some have been equipped with timing devices. When water defrost coils are used in low temperature rooms, ice often forms on the ceiling of the room, in the drain pan and drain lines of the coil, and in any ductwork leading from the coil. Many times electric drain pan and drain line heaters are provided to combat this problem. Where water temperatures run fairly cool, defrosting this type of coil takes considerable time.

Most common method of defrost for forced air coils is either hot gas or electric defrost, both of which are automatically controlled. Several methods are available in each type.

In hot gas defrosting, as the name implies, hot refrigerant gas from the condenser is circulated back through the cooling unit to melt the frost and ice in the drain pan and on the coil. The evaporator actually becomes a condenser, condensing the hot gas into a liquid during defrost. Consequently such coils must have some provision for re-evaporating the liquid returning down the suction line, or compressor damage will result.

Electric defrost units provide electric heating elements on the coil and in the drain pan to melt the frost and ice. These coils are automatically controlled by time clocks and thermostats. They provide an unlimited source of heat for defrosting, and they are extremely simple in operation. ♦



Cost analysis is key to selecting best system of heat rejection

VICTOR C. NELSON
product sales manager
air washers and condensing equipment
Carrier Air Conditioning Co.

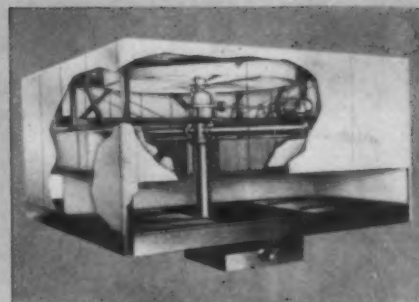
THERE'S NO RULE OF THUMB that will tell you what method of heat rejection to use on any particular airconditioning or refrigeration job. You must analyze all of the factors in each installation and then decide which is best — city water, cooling tower, evaporative condenser, or air-cooled condenser.

One of the simplest methods of heat rejection is the use of city water, or water from wells or other natural bodies. This water is drawn from the source, circulates through the condenser, then dumped down the drain in a continuing process, without any re-use.

Because of steadily mounting restrictions on the use of water, however, you will find it advisable in most cases to use one of the three water conservation devices mentioned. There is a place for each of them. Each will perform the necessary function of completing the cooling cycle.

Generally the selection boils down to a simple matter of owning and operating costs. To determine which type of equipment will give the most desirable results on any job, consult the two tables with this article and carefully weigh all of these factors:

Capacity of system. On jobs up to 150 tons you may decide on any of the three types, depending upon circumstances. Generally you will find that the most practical capacity range for air-cooled condensers is from ¼-ton to 75 tons; for evaporative condensers from 25 to 150 tons; and for cooling towers from 50



COOLING TOWER

These three types of equipment differ in operation but accomplish the same result — they provide for heat rejection from airconditioning or refrigeration systems and cut water consumption.

COOLING TOWER — The induced draft cooling tower is most common type. It consists of basin, fill deck, water distribution system, eliminator section, fan drive, and fan. Fan at top draws ambient air through intakes, across plenum above basin, through fill deck and eliminator section, then discharges it to atmosphere. Warm water from condenser is pumped to upper area of tower, distributed through nozzles or orifices into fill deck. In passing through this heat transfer surface the water is cooled by contact

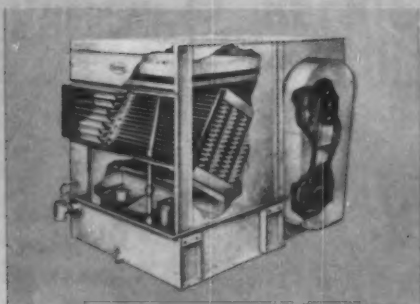
tons up. Normally the cooling tower proves the best bet on bigger jobs because of the additional installation costs involved in multiple applications of the smaller evaporative or air-cooled condensers.

Geographical location. In areas where extremely high dry bulb temperatures prevail you may find that air-cooled condensers are impractical and uneconomical to operate. Where extremely bad water conditions exist, you may find that neither evaporative condensers or cooling towers will prove satisfactory because of water treatment costs and operational problems.

Seasonal period of operation. If the heat rejection equipment is to operate in freezing weather conditions you must include in your calculations the original and operating costs of such add-on items as are necessary to prevent freeze-up.

Number of operating hours. Whether the system is to run on an 8-hour day or a 24-hour day will have an important bearing on operating costs. In the size range where all three types of equipment can be practically applied, you probably will find the air-cooled condenser to be most economical for long periods of operation.

Load variation. How the load on the system varies, as for example in motel airconditioning, is also important. On such a job you might very well



EVAPORATIVE CONDENSER



AIR-COOLED CONDENSER

with air and fill media. Then it accumulates in basin and is ready to be pumped back through condenser.

Forced draft cooling towers operate in the same way except that the fan is located either at the side or bottom and pushes air through the tower. Atmospheric cooling towers, generally used on large industrial water cooling service rather than airconditioning, depend on natural draft.

EVAPORATIVE CONDENSER — Available in either induced draft or forced draft type. Consists of basin, circulating water system, coil or heat transfer surface, and fan section. Air enters intake, passes through plenum above basin, through coil section, and into fan section, from which it is discharged to the atmosphere. Water is pumped

into distribution system and over the entire coil surface, where it picks up heat from refrigerant or other medium circulating in the coil. This heat evaporates a small percentage of the water, which then combines with the air passing into the fan section. Remaining water drains into the basin, and the cycle starts over again.

AIR-COOLED CONDENSER — Involves only the transfer of heat from refrigerant or some other medium in a closed circuit directly to the air. Consists of coil or heat transfer surface, and fan. Ambient air is drawn through coil area, where it picks up heat, and then is discharged to the atmosphere. Simple in design, but requires very large heat transfer surface.

select a number of small air-cooled condensers rather than one large evaporative condenser or cooling tower.

Service and maintenance. Operating cycle of the air-cooled condenser is simplest, and there are fewer things to go wrong on this type of equipment. Evaporative condensers are next best on this score, then cooling towers. You should also take into consideration the number and caliber of persons in the customer's engineering-maintenance department.

When selecting the heat rejection unit for an air-conditioning application, pick it for operation with an average normal wet bulb temperature. In making the same selection for a process cooling application, however, pick the unit on the basis of a maximum wet bulb condition, because even a small reduction in the cooling plant capacity can have an adverse effect on the process.

Best practice is to select the heat rejection unit at the same time that you select the refrigeration system for the job. Only in this way can you determine the most economical combination of the two from the standpoint of both first cost and operating cost.

Often you will find that there are a number of combinations which will produce the required plant capacity within plus or minus 1%. One size of refrigeration machine combined with a certain size of heat rejection unit probably will result in the same overall

system capacity as a size smaller machine with a larger unit, or a larger machine with a smaller unit.

The only way you can correctly select the most economical combination is to carefully analyze both owning and operating costs. The accompanying tables of system data and cost data show you how to do it.

The example used is a 50-ton airconditioning system designed to operate under the conditions indicated and with fixed charges as shown.

The analysis shows that a system using city water for heat rejection would have the lowest overall owning and operating cost. However, since most sections of the country have rigid restrictions against the use of city water for airconditioning, you should carry this analysis further and evaluate the three types of heat rejection equipment used for water conservation. The system with the air-cooled condenser shows up best on this basis.

Job factors such as electrical rates and water quality can have a marked effect on the final cost figure. In the analysis shown in these tables, for example, a higher electrical rate would have made the system with the evaporative condenser the logical choice because of its lower installed horsepower and power consumption.

For tables of system design and cost comparison data, turn the page

SYSTEM DESIGN DATA

ITEM	Unit of Measure	A City Water Condensing	B Cooling Tower	C Evaporative Condenser	D Air-cooled Condenser
Capacity	tons	50	50	50	50
Suction temperature	°F	40	40	40	40
Condensing temperature	°F	105	105	105	120
Design d.b.	°F	95	95	95	95
Design w.b.	°F	76	76	76	76
Water temperature	°F	71	72	72	72
Compressor	bhp	51.0	51.0	51.0	60.0
Condensing water pump	bhp	—	2.9	—	—
Fan	bph	—	1.5	—	7.5
Fan and pump	bph	—	—	5.5	—
Design water quantity	gpm	54	160	—	—
Installed selling price		\$10,100.00	\$14,300.00	\$13,800.00	\$15,300.00
Fixed charges*		990.00	1,420.00	1,380.00	1,490.00
Fixed charges/ton		19.80	28.40	27.60	29.80

*Depreciation, operating personnel, etc.

OWNING AND OPERATING COST DATA

ITEM	A City Water Condensing	B Cooling Tower	C Evaporative Condenser	D Air-cooled Condenser
Electricity for compressor	\$ 910.00	\$ 910.00	\$ 910.00	\$1,060.00
Electricity for other components	—	116.00	145.00	198.00
Water	620.00	95.00	95.00	—
Water treatment	—	150.00	150.00	—
Maintenance and service	75.00	250.00	200.00	150.00
Replacement parts (refrigerant, oil, belts, etc.)	100.00	175.00	150.00	125.00
Total operating cost	1,705.00	1,696.00	1,650.00	1,533.00
Total operating cost/ton	34.10	33.92	33.00	30.66
Fixed charges/ton	19.80	28.40	27.60	29.80
Overall owning and operating cost/ton	53.90	62.32	60.60	60.46

CONDITIONS

1500-hour cooling season

Electrical cost (energy + demand) = \$0.02 kwh

Water costs = \$1.60/1000 cu.ft.

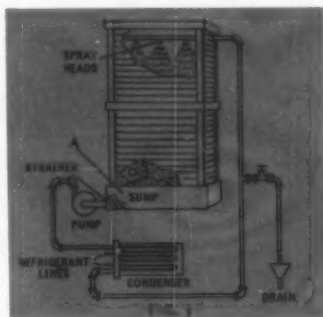
Load factor = .70

TIPS ON CLEANING TOWERS AND EVAPORATIVE CONDENSERS

Costly emergency repairs during a busy season can be prevented by proper application of water chemicals at startup and shutdown time. There are just two basic steps to follow. First, remove all dirt, scale and algae; second, retard corrosion and recurrence of scale with "Virginia" Corrosion Inhibitor. Follow a specific program to prolong equipment life and maintain maximum operating efficiency.

How to clean coil condenser shell and tube

Cleaning Procedure



① Drain and flush out loose dirt from sump. This consumes and wastes cleaner. *This is important.*

② Close bleed and refill with fresh water.

③ Estimate gallons of water in the system. Then add first dosage of solid or liquid scale remover as follows:

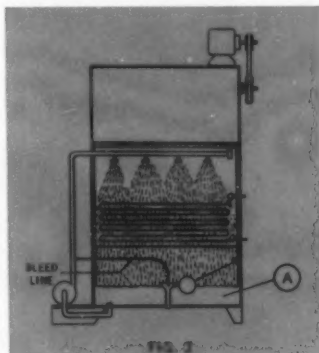
"Virginia" Scale Remover—Solid . . .
5 lb. per 10 gal. water
"Virginia" Scale Remover—Liquid . . .
1 gal. per 15 gal. water

In natural draft cooling towers and in evaporative condensers, the chemical can be added at the sump (as in Figs. 1 & 2). In forced draft towers it can be added at the tower distribution plate, tank or sump.

④ Operate system as usual. Check the scale remover solution strength in the sump every 10-15 min. with test papers. If paper does not turn red when immersed, add more cleaner until it does. Lowered head pressure will indicate when unit is clean—or simply inspect the tubes of the evaporative condenser. Inspecting the water outlet pipe of shell and tube condensers will tell you the scale condition of this type of unit.

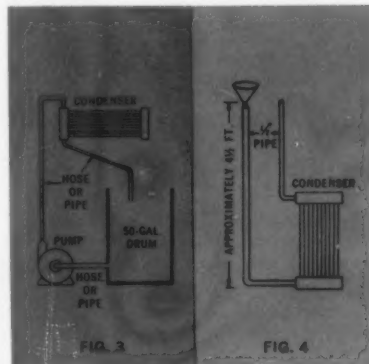
⑤ After scale removal, drain the solution into the sewer (do not, for example, dispose of it on a lawn, as the strong salts can damage vegetation). Rinse out system thoroughly with at least two fillings of fresh water.

⑥ When using liquid scale remover on tower condenser systems, add the liquid near the pump intake for best results. Add 1 gal. at 5-min. intervals until the test paper turns red when immersed in sump water. When sump water has tested red for 20 minutes without addition of more cleaner, most of the system scale has been removed. Lowered head pressure will provide additional assurance of its clean condition. Then clean and rinse as indicated in Step 5. There may be small, thin patches of scale in isolated spots, but this will not prevent proper operation of the unit.



NOTE: Do not add solid scale remover in a concentration of more than 10 lb. per 10 gal. of water. If more is needed, drain out the spent solution and add cleaner to fresh water. "Virginia" Liquid Scale Remover may be used efficiently at all concentrations.

Isolate the condenser from the cooling tower by valves or by actually disconnecting its piping. Prepare a strong cleaner solution in a large plastic pail or wooden tub. Dissolve 5 lb. of solid scale remover in 10 gal. of water—or add 1 gal. of liquid cleaner to 15 gal. of water. Circulate this solution through the scaled condenser by using a pump, as in Fig. 3. To clean moderately scaled units, this should take about one hour. Test the solution regularly with test papers, adding more cleaner as needed. After cleaning, empty and flush the condenser at least twice and then replace it in the system.



A passage way for the cleaner can sometimes be opened up through condensers completely clogged with scale by using a standpipe as shown in Fig. 4. Mix liquid cleaner and water in equal proportions to fill the two vertical pipes to a level slightly above the condenser. Foaming will result from the cleaner action on the scale. So protect surrounding objects from being injured by covering the immediate area with a drop cloth or newspapers. When cleaning is complete, drain the spent solution into the sewer and rinse the condenser at least twice with fresh water.

After starting the cooling system up again, add proper dosage of "Virginia" Scale and Corrosion Inhibitor to the sump.

**FOR TROUBLE-FREE
MAINTENANCE USE**

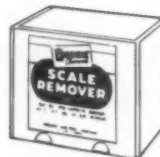
"VIRGINIA" REFRIGERATION PRODUCTS



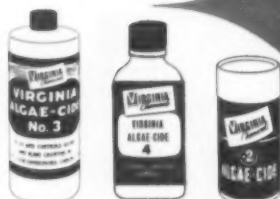
"Virginia" Scale & Corrosion Inhibitor
Reduces scale buildup sharply, keeping scale-forming solids in suspension or solution. Less scale, less labor, lower maintenance costs.



"Virginia" Liquid Scale Remover
Ideal for heavy scale. Dissolves 3 lb. of scale per gal. Works fast. Inhibited to prevent metal damage. (Anti-foam agent and test papers included with every container.) Light shatterproof throwaway container for easy handling and easy pouring.



"Virginia" Solid Scale Remover
Highly inhibited—safe for use on galvanized, dipped zinc and aluminum water-cooled equipment. Destroys algal growth. Contains 96% sulfamic acid.



"Virginia" Algae-Cides
Adaptable to the special use requirements in (1) towers, (2) evaps, (3) air washers, and (4) ice machines and drip pans. A new No. 4 high-potency formula kills the tough resistant types of algae.



Du Pont FREON® Refrigerants
Nonflammable, nontoxic, stable, odorless. Best known for premium quality. Most widely used refrigerants in the industry. "Virginia" is the only national sales agent for Du Pont "Freon". F-11,* F-12,* F-13,* F-22,* F-113* and F-114* are available in cylinders of all popular sizes.

*Du Pont registered trade mark



"Virginia" Ice Machine Cleaner
Eliminates slow freezing, bad taste and odor. Will not injure enamel or polished metal surfaces. Highly effective on automatic cube or flake ice machines.



Permagum Insulation
Tape—ideal for stopping pipe drip. Adheres to any dry surface. *Permagum slugs*—seals seams, copper tube, BX and conduit entries against moisture. *Cords*—nonstaining, odorless, shaped for use on display cases, freezers, room coolers, etc.



VascoCel Insulation
Preformed of soft, durable, clean, odorless Neoprene. Cuts time and labor costs sharply. Closed-cell structure makes condensation impossible. Ozone, oil, acid, and fungus resistant. Application temperature range 0-220°F. Available in 3/8", 1/2" and 3/4" wall thickness.



"Virginia" Degreasing Solvent
No. 10 has low toxicity, is noncorrosive and fast drying. High flashpoint of 154-160°F reduces fire hazard; dielectric strength 20,000 volts.
Ask about "Virginia" "Freon 11" Cleaning Solvent for motor burnouts.



"Suniso" Refrigeration Oils
G Oils are improved for greater stability and lower waxing point. Available in 3G-150 SSU, 4G-300 SSU, and 5G-500 SSU. Dual Inhibited oils have same low wax point, resist breakdown and copper-plating even more effectively.



Can-O-Gas® Packaged Refrigerants
Throwaway cans—full line in screw-top or clip-top cans. Wide variety of preweighed charges, accurate to ± 4 grams. Selection of Freon® gases, sulfur dioxide, and methyl chloride.

Carried by wholesalers everywhere. Order from one nearest you or contact Refrigeration Division, VIRGINIA SMELTING COMPANY, West Norfolk, Va.
Available in Canada and many other countries.

"Virginia" is the only national sales agent and authorized repacker for Du Pont's "Freon" Refrigerants.

Applications MANUAL

HUGO C. SMITH, consulting editor, refrigeration

Holding fresh produce at 28-32 F doubles effective storage life

"FRESH" PRODUCE isn't always fresh enough. And part of the blame can be laid on outdated refrigeration practices used in holding this produce for market.

The industry seems to have fallen into a 34-35 F rut. This temperature is easy to maintain, without expensive self-defrosting equipment. But within the past 10 years food foundations, government agencies, and university research groups have proved beyond a shadow of doubt that a temperature range of 28-32 F is best for most fresh foods.

Specific recommended temperatures are shown in the accompanying table. Generally speaking, these temperatures will extend the preservation time of these commodities to 3-4 weeks, as compared with the 1-2 weeks common at the higher temperatures.

Below 32 F the rate of evolution and bacteria growth are sharply arrested. Relative humidities also are increased at this point, despite general belief to the contrary.

The use of 28-32 F temperatures for meat storage certainly is not new. In fact, 28-29 F used to be the common holding temperature. But in the past 20 years a number of 34-35 F meat storage jobs have been installed, largely because it has been impossible to get equipment ideally suited for below 32 F storage without sharply increasing installation costs.

Close temperature control is the key

Equipment requirements for 28-32 F storage are very definite. You have to have:

- 1) some means of simply and efficiently defrosting the coils;
- 2) large coil surfaces and low air velocities;
- 3) closely engineered air distribution to eliminate all dead spots.

Today you can buy coils that satisfy all three of these requirements for only 25% more than you would pay for a 34 F coil without automatic defrost. This should increase the cost of the complete installation no more than 10%.

Experiments in close temperature control (see the Applications Manual section in the June 1959 issue

of THE REFRIGERATION & AIRCONDITIONING BUSINESS) have definitely shown that this is one of the major factors in food preservation. You can hold storage temperatures of plus or minus $\frac{1}{2}$ of 1 degree by using a duplex system equipped with simple pressure controls.

I have been advocating this type of a system for 10 years, and now the research results of many food experiment stations are solidly backing up my position.

Here's why you get wilted lettuce

The problem of selling a 28-32 F job for fresh food storage is quite complex, and involves a curious chain of interlocked responsibility linking all of the factors involved. To illustrate, let's trace a typical crate of lettuce from grower to consumer. The times given are average, not maximum.

The grower in California or Arizona ships the lettuce to a wholesaler in Cleveland by refrigerated rail car holding a temperature of 35-40 F. This trip takes about 7 days.

The wholesaler immediately puts the lettuce into his 35 F storage, where it may remain for 3 more days.

Then the operator of a supermarket chain buys the lettuce and puts it in his own cold storage warehouse for 2 days before distributing it to his retail markets.

At the retail market the lettuce again goes into the cooler before a portion of it goes on sale in any open refrigerated display case. Here another 2 days elapses.

By the time the lettuce reaches the retailer it has already begun to look a little the worse for wear, so it is trimmed to give it a fresh appearance. The housewife selects a nice looking head from the case, takes it home, and places it in the hydrator section of her refrigerator. Depending upon whether she shops once or twice a week, she will expect this head of lettuce to last her from 3 to 7 days.

Add up these average figures and you'll find that by the time this head of lettuce reaches the table it is 18 days old. Maximum storage time for head

Continued on page 56

lettuce at 35 F is 1-2 weeks. Is it any wonder that the housewife has trouble setting a crisp salad before her family?

Food handlers and shippers, buck the efforts of refrigeration engineers to sell them 32 F storage on the grounds that they do not need 3-4 weeks storage time. Yet the plain fact remains that it often does take this much time for fresh produce to pass through

the complete chain of distribution from grower to consumer. Small wonder that the average food market presents a rather droopy vegetable counter to the shopper.

Some markets, however, exercise sufficient care in their selection and handling of produce so that they are able to merchandise it in fresh and palatable form. As more and more consumers demand this type of produce, it will make it easier for the refrigeration contractor to sell the concept of proper storage temperatures, as determined by the most modern research, to keep the produce in prime condition from field to table. ♦

Recommended storage conditions for specific products

COMMODITY	STORAGE TEMP. RANGE	RELATIVE HUMIDITY RANGE	APPROXIMATE STORAGE LIFE	COMMODITY	STORAGE TEMP. RANGE	RELATIVE HUMIDITY RANGE	APPROXIMATE STORAGE LIFE
Apples	30-32	85-90	3-8 months	Garlic, Dry	32	70-75	6-8 months
Apricots	31-32	85-90	1-2 weeks	Gooseberries	31-32	80-85	3-4 weeks
Artichokes, Globe	31-32	90-95	1-2 weeks	Grapefruit	32	85-90	4-8 weeks
Jerusalem	31-32	90-95	2-5 months	Grapes			
Asparagus	32	90-95	3-4 weeks	American Type	31-32	85-90	3-8 weeks
Beans, Lima	32	85-90	10-15 days	European Type	30-31	85-90	3-6 months
Beets				Horseradish	32	90-95	10-12 months
Bunch	32	90-95	10-14 days	Lettuce	32	90-95	3-4 weeks
Topped	32	90-95	1-3 months	Logan Blackberries	31-32	85-90	7 days
Blackberries	31-32	85-90	7 days	Meat			
Broccoli, Sprouting	32	90-95	7-10 days	Beef, Fresh	29-30	88-92	1-6 weeks
Brussels Sprouts	32	90-95	3-4 weeks	Hams and			
Butter	32	80-85	2 months	Shoulders, Fresh	29-30	85-90	1-2 weeks
Cabbage, Late	32	90-95	3-4 months	Lamb, Fresh	29-30	85-90	5-12 days
Carrots				Pork, Fresh	29-30	85-90	3-12 days
Bunch	32	90-95	10-14 days	Veal	29-30	90-95	5-12 days
Prepackaged	32	80-90	3-4 weeks	Mushrooms	32	85-90	3-5 days
Topped	32	90-95	4-5 months	Onions & Onion Sets	32	70-75	6-8 months
Cauliflower	32	85-90	2-3 weeks	Oranges	32	85-90	8-12 weeks
Celeriac	32	90-95	3-4 months	Parsnips	32	90-95	2-6 months
Celery	31-32	90-95	2-4 months	Peaches	31-32	85-90	2-4 weeks
Cherries	31-32	85-90	10-14 days	Peas, Green	32	85-90	1-2 weeks
Corn, Sweet	31-32	85-90	4-8 days	Peppers, Chili (dry)	32-33	65-75	6-9 months
Currents	32	80-85	10-14 days	Persimmons	30	85-90	2 months
Dewberries	31-32	85-90	7-10 days	Plums (incl. fresh)	31-32	80-85	3-4 weeks
Eggs, Shell	29-31	85-90	8-9 months	Poultry, Fresh	30-32	85-90	1 week
Endive, Escarole	32	90-95	2-3 weeks	Quinces	31-32	90-95	2-3 months
Figs				Radishes	32	90-95	10 days
Dried	32	50-60	9-12 months	Rabbits, Fresh	32	90-95	1-5 days
Fresh	28-32	85-90	5-7 days	Raspberries	31-32	85-90	7 days
Fish, Fresh	32-33	90-95	5-20 days	Rhubarb	32	90-95	2-3 weeks
Mild Cured	28-35	75-90	4-8 months	Spinach	32	90-95	10-14 days
Fruits, Dried	32	50-60	9-12 months	Strawberries	31-32	85-90	7-10 days



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In this case the cab isn't a commercial taxi, but merely the company's roving service truck that picks up servicemen, takes them to their jobs, and keeps them supplied with parts.

Here's how it works:

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Each serviceman has his first call, received from the dispatcher the night before. The truck makes the rounds, dropping men off for their jobs. When each man finishes, he calls the dispatcher and receives his next assignment.

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By the time the truck gets to him, the serviceman is usually waiting on the curb.

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Scheduling is left up to the dispatcher with emergency calls taking precedence over routine maintenance work. During the hot season there are so many

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What's saved by this method?

Servicemen do not use their own cars, so Air Comfort saves car expense for them plus money for parking for these six vehicles.

Hundreds of hours of travel time are conserved and operations in the Loop have been speeded up considerably.

The number of incomplete calls has been drastically reduced. Monkerud explained it this way: "I'm sure you can see the difference where a serviceman makes a call and finds he needs a fan motor and has to come back the next day. Here you've got lost time plus customer inconvenience.

"We've eliminated both."

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APPLICATIONS MANUAL

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BUILDING COLUMNS (circled) rest directly on insulation in this cold storage warehouse. Photo above shows how wall and roof insulation are joined to provide complete protection.

Insulation serves as roof deck in cold storage warehouse

CELLULAR GLASS INSULATION, not precast concrete, forms the roof deck at Commercial Cold Storage Co.'s new warehouse in Atlanta, Ga. This was only one of several unusual construction techniques used in this building.

This lightweight roof pared \$8200 in steel costs and saved another 30¢ a sq.ft. by eliminating the conventional roof decking. Builders chose Pittsburgh Corning "Foamglas" because of its structural strength.

Insulation is placed in bulb tee-irons. Then a built-up roof is set directly over it.

Normally, insulation has to be cut to fit around building columns. However, builders were able to set columns directly on top of this cellular glass insulation because of its compressive strength of more than 7 tons per sq.ft.

In addition to its use on the floor and in the roof, insulation was run up the inside walls to join with roof insulation. At no point does steel protrude through Foamglas.

Unlike conventional construction, there are no thermal short circuits at beams and columns. Thus this envelope of insulation is complete except for

some thin tie rods between the columns and the outside wall.

There are 500,000-cu.ft. of refrigerated space, divided into two cooler rooms of 125,000-cu.ft. each and a freezer room of 250,000-cu.ft. Cooler temperatures range between 32 and 36 F. Freezer temperature is -10 F and does not fluctuate more than two degrees.

Here's how insulation was installed:

Freezer floor: Two 3" layers of insulation are installed in hot asphalt on a 6" concrete subfloor. Joints in these layers are staggered and a coat of hot asphalt is mopped on. Pads of insulation, cut 2 x 2 x 1', support the steel columns. Oil, at 55 F, circulates through pipes in the subfloor to keep the ground from freezing. A 4" concrete wearing slab is the final layer.

Cooler floors: Insulation covers only a perimeter band 4" thick and extending 4' from the wall. The center is filled with crushed rock and earth under a 4" concrete wearing floor.

After finishing the floors, the builders erected structural steel and then the roof. An initial layer of 18 x 24" blocks of cellular glass was fitted between bulb tee-irons, spaced on 24" centers. These, in turn, were supported by 18" bar joists, spaced 6'.











Freezer roof: Has two layers of 5" insulation.

Cooler roofs: Have a layer of 4" blocks and a second layer of 2" blocks with joints of the second layer staggered. A built-up roof goes over the final layer.

The compressive strength of cellular glass insulation allowed the construction of unsupported walls to separate the freezers and coolers. The wall between the coolers is a free-standing partition of two 2" layers of insulation blocks bonded with hot asphalt. The wall separating the freezer from the cooler is composed of two 3" layers.

Fifty-eight tons of refrigeration are supplied for this warehouse by twin York 25-ton compressors and a single 8-ton booster compressor. Cellular glass insulation is also used on all piping. ♦

WANT PEAK PERFORM- ANCE AIR CONDITION- ING*

Buy Sporlan *Catch-Alls*...   ... *See-Alls* ...  
Solenoid Valves ...   ... Thermostatic Expansion
Valves ...   and Refrigerant Distributors ...  
They're the Perfect Combination for any size installation!

* Yes, and you can be sure of right down the line peak performance every time with:
a Sporlan Catch-All ... the first molded porous core filter-drier
the amazing See-All ... the first combination moisture and liquid indicator
a Sporlan solenoid valve with a moisture proof layer wound coil
a Sporlan thermostatic expansion valve with a Flow Master element
and ... a Refrigerant Distributor with the versatile interchangeable nozzle

See your Sporlan Wholesaler today ... he'll be glad to fill you in on all the details!

SPORLAN VALVE COMPANY
7325 SUSSEX AVENUE ST LOUIS 17, MISSOURI
 Export Dept. 85 Broad Street, New York 4, N. Y.

circle 72 on reader service card

Contractor-Dealer **ACTIVITIES**

So. Calif. RACCA plans 5-point program in '61

President L. P. Jacobsen has put into effect a 5-point program for 1961 for Southern California Refrigeration and Air Conditioning Contractors Association.

Focus in 1961 is on:

(1) Increased activity on legislative matters at both the local and state level;

(2) Extension of labor-management relations through Certified Refrigeration and Air Conditioning Foundation;

(3) Cooperative effort with RACCA National on wholesaler and manufacturer relations and liaison with these groups at the local level;

(4) Development of greater service and joint industry activities; and

(5) Establishment of means of assistance and inter-industry cooperation in planning the RACCA National convention and the Air-Conditioning & Refrigeration Institute Exposition in Los Angeles next year.

Jacobsen also announced that the Los Angeles building depart-

ment has reversed an original code requirement calling for control equipment on refrigeration and airconditioning units to be installed only by electrical contractors.

This change now permits refrigeration and airconditioning contractors to install control work along with electrical contractors. The new ruling also requires that permits be issued for the first time for installing controls in refrigeration and airconditioning.

Another benefit was outlined for Southern California RACCA members. More efficient methods have been established for handling and administering various benefit funds for union members in the area.

This system has been set up by a joint committee of refrigeration and airconditioning contractors and representatives of the local branch of refrigeration fitters.

New procedures cover payments, processing, accounting and administration of the employee's health & welfare and pension funds. Fringe benefit funds are under the supervision of a joint board of trustees also composed of representatives from labor and management.

Hanson named to head California foundation

Al Hanson has been named chairman of Certified Refrigeration and Air Conditioning Foundation (CRAC), an industry promotion organization in Southern California. He's president of National Refrigeration Sales, Inc., Los Angeles.

Hanson will serve one year as chairman. CRAC is a function of a joint committee of representatives of Southern California chapter of Refrigeration & Air Conditioning Contractors Association and members of Refrigeration Fitters, branch local #250, United Association.

CRAC seeks to encourage standards of service performance and reliability as well as providing edu-

cation and training for apprentices and journeymen working in the industry.

A special presentation called "Operation Leadership" helps CRAC members tell their story to various segments of the business community.

RACCA officers elected

Four Refrigeration and Air Conditioning Contractors Association groups recently held election of officers. Elected were:

RACCA of Eastern Pennsylvania—Benjamin S. Urmston, president; James F. Bieret, vice president; Walter W. Schwind, secretary; Francis A. Roesch, treasurer.

RACCA of Tacoma-Olympia, Wash.—Robert G. Hibbard, president; Sanford O. Brown, vice president; E. S. Anderson, secretary-treasurer.

RACCA of Northern California—George Eskra, president; George Dale, vice president; Herschel O. May, secretary; Don Yates, treasurer.

RACCA of New Jersey—Ray Eggert, Jr., president; Chet Karas, vice president; Dan Desesa, treasurer; Edward Kessler, sergeant-at-arms.

Attendance reported up at NWAH short courses

Nearly 80 men from seven states attended the warm air heating and airconditioning course at North Carolina State College in March, according to National Warm Air Heating and Air Conditioning Association.

Most of the students were sent by contractor-dealers as attendance showed an increase of about 15%.

A similar course at Oklahoma State University attracted 57 men in February. One session was on dealer-contractor management and the NWAH text, "Management Reference Guide for Dealer-Contractors," was used.

Airtemp Div. appoints two new distributors

A complete line of Chrysler Corp., Airtemp Div. room airconditioners will be carried by two new distributors, one in Rhode Island and the other in Texas.

Central Wholesaler, Inc. of Providence will cover Rhode Island and four counties in Massachusetts. Samuel Karp is vice president of the company.

Consolidated Appliance Co. of Amarillo is to cover 63 counties of western Texas and eastern New Mexico, including the cities of Amarillo, Pampa, Lubbock, Big Spring, and Odessa in Texas.

Consolidated's president, H. H. Corn, served with Airtemp for 15 years as a district manager in Oklahoma and Texas.

how do distributors rate
NOR-LAKE refrigeration products?



"Nor-Lake means more sales!"

...says Dave Friedman, of Paramount Fountain & Restaurant Supply Corp., Providence, R.I.*

"Our experience indicates that NOR-LAKE equipment gives dealers a number of sales advantages. In our highly competitive markets where ruggedness, dependability and long life are so important, NOR-LAKE features add up to increased opportunities for increased profits.

"First, NOR-LAKE has a full line of quality equipment with 'Fine-Line' appearance. This wide range of attractive refrigeration products allows us to effectively compete and bid on a diverse number of applications.

"We've discovered that NOR-LAKE's years of experience are our best assurance of customer satisfaction and increased future acceptance of our sales efforts. Finally, with NOR-LAKE it's possible to add extra profit dollars to our account through savings in sales time or trouble and service calls.

"To put it simply, NOR-LAKE means more sales because NOR-LAKE has more to offer."

*Paramount Corporation is one of the largest suppliers of equipment for restaurant and hotel chains and institutions on the East Coast.

NOR-LAKE'S "FINE-LINE" IS A FULL LINE

- freezers
- ice cube makers
- refrigerators
- bottle coolers
- walk-ins
- direct draws
- biological refrigerators
- freezer-refrigerator combinations

ALL MODELS AVAILABLE IMMEDIATELY,
IN STAINLESS STEEL IF DESIRED

NOR-LAKE, Inc.

Second & Elm, Hudson, Wisconsin, Dept. 206



Write today for information about NOR-LAKE sales opportunities in your area.

Please rush FREE illustrated information on ☐ Freezers

☐ Refrigerators ☐ Walk-in Coolers

Other _____

NAME _____

ADDRESS _____

CITY _____ STATE _____

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Wholesaler **ACTIVITIES**

K.C. wholesaler promotes service with direct mail

A series of six direct mailing pieces helped Superior Supply Co. of Kansas City, Mo., promote its modernization program. These announcements were sent to Superior's customers at intervals of ten days.

In brief, they discussed:

A new electronic communication system with nine telephone trunk lines, eliminating a busy signal when customers call Superior's new number;

Remodeled offices to allow more space for paper work, promising faster processing of orders;

An electric eye door opener leading to the parking lot for customers loaded down with supplies;

A pneumatic transcube that speeds an invoice or cash sale from the wholesaler's counter to the office in a plastic tube;

The addition of 500-sq.ft. of floor area to the sales floor;

Use of supermarket-type carts for customer's use in gathering parts;

Quicker check-out facilities because of an enlarged counter;

Free hot coffee, and

Better service through electronic data processing of invoices, inventories, and other office work.

New literature rack available from Sporlan

Wholesalers have been supplied with literature racks containing new educational and product information bulletins.

Included in the assortment is Form 48 which deals with installation, field service, and assembly of thermostatic expansion valves. As newer data is received, wholesalers can add to those bulletins already on display.

Moves to new location

Debbs Refrigeration Supply of Cleveland, Ohio, has moved to 14723 Miles Ave.

ACTIVE ARW REGIONS RECEIVE AWARDS



TWO RECIPIENTS of Active Region Awards at the recent Air-Conditioning & Refrigeration Wholesalers convention are congratulated by E. S. Diggle, membership committee chairman. Awards went to the two regions with the largest growth in membership. In photo at left is Bill Milstead, Austin, Tex., chairman of Region 8. Accepting for Region 9 is W. C. Miessemer. Diggle is on the right in both pictures.

Seven ARW regions schedule meetings

Regional meetings have been scheduled by seven Air-Conditioning & Refrigeration Wholesaler regions for the remainder of the year.

The board of directors of ARW will meet Oct. 19-21 at the Pick-Carter Hotel, Cleveland, Ohio.

Schedule of regional meetings is:

Region 4—Tentatively scheduled for November in Miami, Fla.

Region 5—June 15-17, Bedford Springs, Pa.

Region 6—July 13-15, Wagon Wheel Inn, Rockton, Ill.

Region 7—June 1-3, Kansas City, Mo.

Region 8—August 3-5, Granada Hotel, San Antonio, Tex.

Region 10—Sept. 22-24, Otessa Hotel, Cooperstown, N.Y.

Region 11—June 16-17, Hotel Gearhart, Gearhart, Ore.

Wholesaler meetings aim to help small contractors

A series of dinner meetings have been set by Kleinman Brothers, Inc., Baltimore, Md., wholesalers to aid the small contractor-dealers in the area.

Attendance is by invitation only. A recent discussion on "Tax Problems in Small Business, and Some

Possible Solutions" attracted 80 persons. A local certified public accountant and a tax attorney were the main speakers.

Henry Kleinman, president of the wholesaling firm, wants to present information to contractor-dealers not normally available to them. "Response to this type of meeting has been very enthusiastic," he said.

NHAW helps develop school for wholesalers

A training program to prepare young men for careers in wholesaling has been developed by North-American Heating & Airconditioning Wholesalers Association, the distributive education service of the Ohio State Dept. of Education, in cooperation with National Association of Wholesalers.

The 2-year program will be conducted at Ohio State University, Columbus, under direction of Dr. William B. Logan, professor of education. He outlined the program at the NHAW International Convention in Montreal last month.

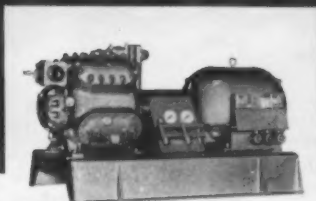
Applicants for the program must be employed by a recognized Ohio wholesale company before enrolling for the course. Students will attend classes at OSU for a 2-month "in school" session and work in

Continued on page 73

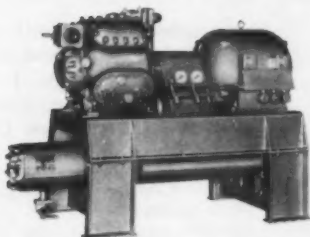
M-PAK*

**MODULAR
REFRIGERATION
AND AIR CONDITIONING
UNITS INCREASE
AVAILABILITY...
SPEED-UP DELIVERY**

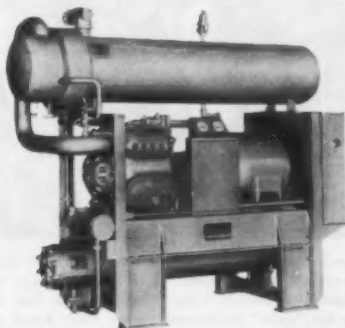
*Modular Packages



B&G Compressor plus B&G Motor becomes a B&G Motor Compressor.



B&G Motor Compressor plus B&G Condenser and base becomes a B&G Condensing Unit.



B&G Condensing Unit plus B&G Evaporator and Control System becomes a B&G Package Liquid Cooler.



In its M-Pak Modular Packages, B&G presents a new advance in efficiency designing of air conditioning and refrigeration equipment. M-Pak units are built around five basic sizes of open-type compressors. Factory-stocked motors, condensers, evaporators and controls can be added to these basic units to make a comprehensive line of "packages" of from 7½ to 150 tons.

For example, motor compressors are produced by adding a B&G-built motor to a B&G basic compressor. Further addition of a B&G condenser and a standard base makes a condensing unit.

All major components of M-Pak units are designed, manufactured, and guaranteed by B&G...one responsibility for the entire package. This, we believe, is an exclusive feature.

B&G also makes a complete line of refrigeration and air conditioning evaporators, condensers and centrifugal pumps—with many commonly used sizes available for immediate shipment from factory stock.

Send today for complete engineering and selection data on Bell & Gossett M-Pak® refrigeration and air conditioning units.



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C O M P A N Y

Dept. GR-45, Morton Grove, Illinois

Canadian Licensee: S. A. Armstrong, Ltd., 1400 O'Connor Drive, Toronto 16, Ontario

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now
there's
no need
to
bleed!



**stop scale
before it starts**

Cooling tower treatment, closed recirculating systems, or neutralizing airborne acids . . . CSCO Solvex Maintenance Formula handles them all . . . and eliminates the need for expensive bleed-off. As little as a half pound of Solvex Maintenance per ton of refrigeration per month reduces scale and corrosion—neutralizes acids—and saves water. Only monthly flushings and Solvex Maintenance are necessary. Available in tablets or grains. Insist on a quality Solvex product.

CHEMICAL SOLVENT CO.
BIRMINGHAM, ALABAMA



ASK
YOUR
WHOLESALE
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People ON THE MOVE

Baltimore Aircoil Co., Inc. promotes **W. Donald Geiser** to vice president, production, and **Morris B. Older** to treasurer. **Frederick M. Long** is appointed assistant sales manager, concentrating on field sales work, replacing **John W. Overend**, now specializing in national account and government sales.

Albion Div., McGraw-Edison Co. appoints **D. D. Williams** to the newly-created position of sales manager, central airconditioning products. He's been southeastern regional manager with the division for three years.

Robert L. Crooks joins Bohn Aluminum & Brass Corp. as a sales representative in the Chicago district office.

York Div., Borg-Warner Corp. assigns five marketing department personnel as product managers. New managers and their products are: **Ledyard Avery**, central station airconditioning; **A. F. Johnson**, heat pumps and centrifugal compressors; **Paul J. McDaniel**, perimeter airconditioning; **Paul S.**

Walton, refrigeration machinery, and **Willard L. Eastman**, centrifugal and absorption liquid chilling packages.

Trane Co. names **Vernon E. Bushnell** manager of absorption sales, a newly-created position. **Arthur L. Wasserman, Jr.**, replaces Bushnell as manager, Convector Products sales department.

B. J. Johnson is representative for Ventco, Inc., in District of Columbia, Pennsylvania, and Virginia.

Herbert P. Tinning joins Virginia Smelting Co.'s refrigeration dept. as a water chemical field engineer. He will work from the New York office, taking over the New England and Middle Atlantic States territory.

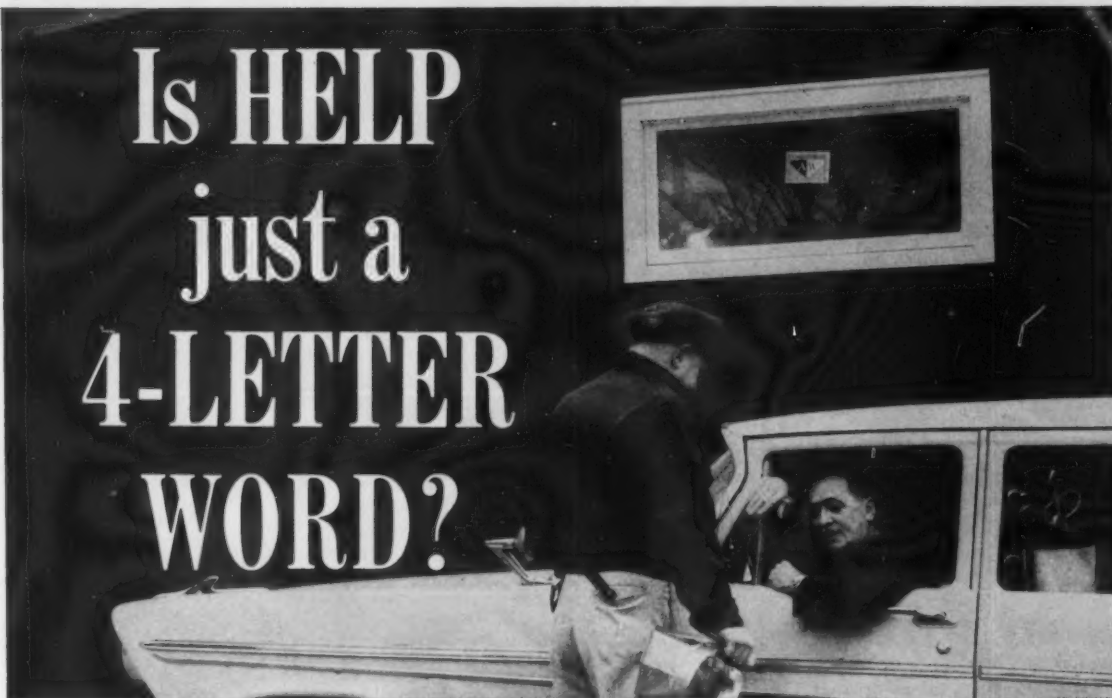
New midwest regional sales manager for Westinghouse Air Conditioning Div. is **A. J. Gilbreath**. He's been sales engineer in the division's Los Angeles, Calif., office.

Continued on page 102



GETTING TOGETHER for a 3-day sales meeting are refrigeration salesmen and distributors for Ansul Chemical Co. at company headquarters in Marinette, Wis. Sales strategy and planned promotions for this year were discussed. Personnel from Union Carbide Co. also attended the meeting and outlined promotion for "Ucon" refrigerant during 1961. Ansul personnel are: top row (l. to r.)—**E. M. Billings**, **John Worthington**, **Bill Dufrane**, **Neale Engberg**, and **Stan Clobridge**; second row from top—**Ralph Moore**, **J. H. Jarrett**, **Herb Dill**, **Tom Lester**, and **Glenn Iams**; front row, including those on step just above—**Walter Krause**, **John Bopp**, **Ed Beacham**, **George Vermilye**, **Van D. Clothier**, **John Gregory**, **Bill Gullatt**, **Jim Maurer**, **Frank Hawk**, **Vance Rutledge**, and **John Harpole**.

Is HELP just a 4-LETTER WORD?



IN every industry there are companies better at talking than acting . . . companies long on promises before they get your business, but short on "follow-through" once your account is signed, sealed and delivered.

If that description sounds familiar, we suggest you take a look at International . . .

When you do, we think you'll find a company that goes all out to give its dealers "on the spot" help . . . No matter where you are there's an International distributor and/or company representative nearby, *instantly available* when needed.

You'll also find an outfit as free of red tape as it can get . . . The line of communication between your distributor and the International factory is always open. That means fast decisions and constructive help on any sales or service problem.

Most important, you'll find a company *big enough* to incorporate the latest technological advances in its heating and cooling line . . . *small enough* to consider your business a vital and valuable part of its own.

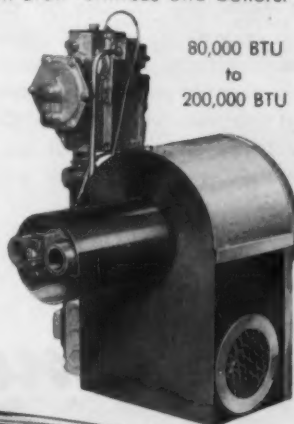
We invite you to find out how many different ways you benefit when you join up with International. Write today for full details to: International Heater Company, Utica, N. Y., Dept. C-61.

NEW

POWERSHOT

A POWER GAS BURNER

for converting difficult oil-fired units such as horizontal furnaces or down-draft furnaces and boilers.



80,000 BTU
to
200,000 BTU

GAS AND OIL HEATING
COOLING
ELECTRIC FURNACES
AND HEAT PUMPS



HEATING
COOLING



UNIFORM TEMPERATURE HIGH HUMIDITY AUTOMATIC DEFROST

RANCO 019 TWO TEMPERATURE CONTROL is designed especially for use on commercial fixtures such as walk-in coolers, display cases, florist boxes. It effects frequent cycling of the refrigerator system to maintain uniform air temperature and high relative humidity. Duration of refrigeration from "cut in" to "cut out" settings is variable for each running cycle according to

internal load and weather conditions. Setting points are individually controlled. Fixture air temperature is adjustable with a knob from 1 to 10 positions without affecting evaporator defrost. Write for further information and Technical Bulletin 1731.



In Canada: Ranco Controls, Canada Ltd., Toronto 18, Ontario



Service Clinic FOR CONTRACTORS

A MONTHLY TRAINING GUIDE AND REFERENCE FILE FOR YOUR SERVICE DEPARTMENT

This simple field test helps take guesswork out of hermetic burnouts

MR. CONTRACTOR:

Watch for the Service Clinic every month. The buff-colored pages will make it easy to find. Pull out the complete section and pass it on to your installation and service department. The material in this section is especially selected, written, and edited to help these men do a better job.

GOT A BURNOUT in a hermetic condensing unit?

Don't try to guess how bad it is, or how long you have to flush the system before it is really clean. Now for the first time you can use a simple field test to tell you accurately the degree of acidity in a system after burnout, and whether or not all of this acidity has been removed by your clean-out procedure.

This on-the-spot acid test has been developed by Allied Chemical's General Chemical Div. This same company has made available a simple and inexpensive kit containing all the materials necessary to perform this test. These kits are available from refrigeration and airconditioning wholesalers.



Here's what the kit contains (left to right in photo): cylindrical sample tube; wide-mouthed glass flask; Solution A in polyethylene bottle; Solution B in drop-dispensing bottle; polyethylene beaker (1-pint capacity).

Continued on page 68

Here's the acid test for hermetic burnouts, step by step

BEFORE CHECKING to determine the degree of contamination in the system, discharge the oil-refrigerant mixture as a liquid into a suitable container for disposal. Better yet, discharge it through a suitable line directly to the outside.

This liquid may contain acid, so use rubber gloves in handling it and be sure to avoid any contact with the skin or breathing of the vapors. (For more details on this procedure, see the Applications Manual section of our May issue.)

After visual inspection, flush the system with Refrigerant-11. Now you are ready to make your acid test. Follow the procedure outlined here, step by step:

- 1 Rinse both sample tube and flask well with clean Refrigerant-11, then dry them.



- 2 Fill polyethylene beaker with Refrigerant-11 used to flush the burned-out system.



- 3 Dump Refrigerant-11 from beaker into waste container.

- 4 Refill beaker with Refrigerant-11 flushed from system (see Step 2).



- 5 Fill sample tube with this Refrigerant-11 from beaker, then dump it. (The purpose of all steps so far is to ensure a uniform sample.)



- 6 Refill sample tube up to bottom mark on tube with Refrigerant-11 flushed from system into beaker. (Be sure to measure accurately.)



- 7** Add solution A until mixture reaches top mark on sample tube.



- 10** If solution turns pink, and stays that way for 30 seconds, acidity of the system is low, and no further cleaning is necessary.



- 8** Pour this mixture of liquids into glass flask.



- 11** If solution does not turn pink, or turns pink momentarily but doesn't stay that way, add 15 more drops of Solution B and mix gently.



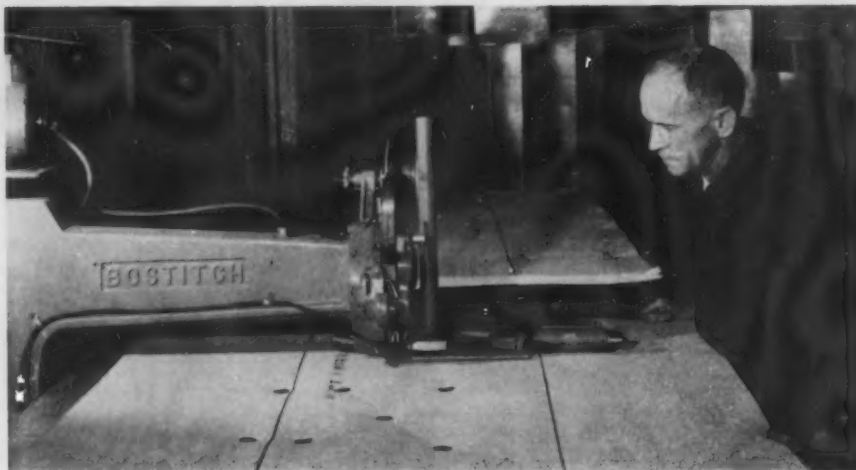
- 9** Add 5 drops of Solution B to contents of the flask and mix gently.

- 12** If solution then turns pink, and stays pink for 30 seconds, the system has moderate acidity and must be cleaned further, by pressurized Refrigerant-11 or a pumping procedure.

- 13** If solution still does not turn pink after adding a total of 20 drops of Solution B, the system has high acidity and must be cleaned by pumping Refrigerant-11 through it. ♦

Punching staples through plastic discs licks problem of fastening duct lining

TWICE AS FAST as gluing, this machine staples insulation to inside surface of duct before it is formed. Fiber discs keep staples from driving through glass fiber blanket. Special accessory (vertical tube in center of photo) drops disc on insulation when operator presses foot control.



EVER WISH YOU HAD A MIDGET working for you to crawl through airconditioning ducts and examine the insulation on the inside? However, if you can be sure the insulation will stay attached, you don't need the midget and you don't have to worry.

A. Nabakowski Co., Inc., of Amherst, Ohio, is a job shop that makes airconditioning duct systems to contractors' and architects' specifications. It decided to get rid of its worry about duct insulation once and for all.

Co-owner James Nabakowski had been gluing fiber glass insulation to the inside of ducts for years. But, he found that the insulation came loose and often blocked the ducts. It frequently took hours to find the block and repair it.

The simplest cure seemed to be to staple insulation to the metal. But his stapling machine was too effective. Not only did it drive staple legs through the

insulation and the sheet metal, but it also drove the staple crown through the insulation. And this wasn't good.

However, Nabakowski solved the problem by adding a disk-dispensing accessory that kept staples from punching through. Now each time the operator presses the pedal, a $\frac{1}{8}$ " fiber disk drops on top of the insulation. The staple goes through the disk, insulation, and metal and clinches on the outside of the metal. This machine is used with sheet metal from 18 to 25 gage.

Nabakowski says stapling has just about eliminated insulation coming loose. What's more, it's more than twice as fast as gluing. The material costs a little more, but labor savings far outweigh this and there are few callbacks to repair insulation.

The stapling machine, a Bostitch S25C, uses 18-gage wire on spools. It cuts and automatically forms its own staples. ♦

Look for these Service Clinic articles in coming issues:

- How to clean electric motors
- Using an electronic leak detector
- Proper evacuation of cooling systems
- How to use a snap-around volt-ammeter



SHOWN: A few of the tremendous line of 120 Kold-Draft ice cubers.

120 Different models to choose from... Only by *KOLD-DRAFT

• ALWAYS A PERFECT CUBE
... CLEAR ... PURE ... SOLID

• COMPLETELY FLEXIBLE
... ADD-A-UNIT FEATURE

• GUARANTEED
CAPACITY RATINGS

The unique Add-A-Unit feature of Kold-Draft ice bins and ice cubers afford unsurpassed flexibility in ice making and bin capacity, and allows expansion of either or both as your business grows . . . automatic ice crusher is available for most models . . . its compactness permits use where space is extremely limited . . . all models available in beautiful Pearl-tone grey baked-on vinyl enamel or stainless steel . . . air cooled, combination air/water, or straight water . . . a model to fit all requirements whether large or small . . . send coupon for full information.

*TRADEMARK REG. U.S. PAT. OFF.

KOLD-DRAFT DIVISION

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UNIFLOW MANUFACTURING COMPANY • ERIE, PENNSYLVANIA

A complete
line of
refrigeration
products
from
ONE
reliable
source



WATER
COOLERS



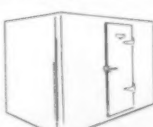
BEER
DISPENSERS



BEVERAGE COOLERS



SOFT DRINK
DISPENSERS



WALK-IN COOLERS



KOLD-VUE
BEVERAGE
MERCHANDISERS

TOM MARTIN, Sales Manager
KOLD-DRAFT DIVISION
UNIFLOW MANUFACTURING COMPANY
ERIE, PENNSYLVANIA

YES, we are interested in distributing Kold-Draft ice cubers . . . please
send complete literature and prices.

NAME _____

FIRM _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

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Musselman's new half-million cubic foot warehouse, Arendtsville, Pennsylvania.

STYROFOAM®



"It pays to select STYROFOAM and an Approved Insulation Contractor to install it!"

"Almost 43,000 square feet of Styrofoam insulation board keeps our new cold-storage warehouse at an even 32°F.," says Nelson Weber, Farm Technologist for The C. H. Musselman Company. "Styrofoam gives us an ideal storage environment—a critical matter for apple crops, much of which may have to be stored for several months before marketing."

This new half-million cubic foot capacity warehouse at Arendtsville, Pa., is insulated with 4-inch thick Styrofoam, installed by a Dow Approved Insulation Contractor. The general contractor on this warehouse job declares, "Installation of Styrofoam by an AIC pays—we know he'll give us the best possible job because of the experience of his professionally-trained crews. High quality workmanship and a superior product (Styrofoam) add up to a thoroughly satisfactory job—one that's done right!"

Styrofoam—lightweight, rigid insulating material—has



Nelson Weber, Farm Technologist,
The C. H. Musselman Company.

a low "K" factor that stays low. Its millions of tiny, non-interconnecting air cells provide high resistance to water and water vapor—water does not penetrate to freeze, swell and crack the insulation. And Styrofoam won't attract vermin, an important consideration in food storage.

The seal above is displayed by Dow Approved Insulation Contractors, chosen by Dow for their experience, business reputation, and high quality workmanship. The AIC takes great care to follow Dow recommendations for installing Styrofoam. For the names of Approved Insulation Contractors near you, write THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Dept. 1539EH6.

Styrofoam is a registered trademark of The Dow Chemical Company. It is applied only to the homogeneous expanded polystyrene made according to an exclusive Dow process. Styrofoam brand insulation board is available only from Dow and its authorized representatives.

THE DOW CHEMICAL COMPANY



Midland, Michigan

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JUNE 1961/THE REFRIGERATION & AIRCONDITIONING BUSINESS



Stops moisture...

STYROFOAM®

for pipe covering insulation

Low-temperature pipe covering made of Styrofoam does an excellent job and requires minimum maintenance. Its unyielding resistance to moisture and its permanent low thermal conductivity prevent condensation and dripping—reduce heat transfer.

Pipe covering made of Styrofoam will not crack or split from thermal shock. Since it does not absorb water, it is not affected by ice build-up around uninsulated valves. It's lightweight and easy to apply. A complete line of pipe and vessel covering made from Styrofoam is available from the following fabricators:

COLUMBIA ASBESTOS CO., Portland, Ore. • ENGINEERED FOAM PLASTICS CORP., Elkhart, Indiana • GLO-BRITE PRODUCTS INC., Chicago, Illinois • KENNEDY INDUSTRIES, Los Angeles, California • KRANSCO MANUFACTURING COMPANY, South San Francisco, California • MMM INCORPORATED, Houston, Texas • ROBINSON INDUSTRIES, Coleman, Michigan • STYRO FABRICATORS, Kansas City, Kansas • STYROFORMICS, INC., Somerville, Mass. • STYROPLASTICS, INCORPORATED, Minneapolis, Minnesota • TUFLITE PLASTICS, INC., Ballston Spa, New York



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THE REFRIGERATION & AIRCONDITIONING BUSINESS/JUNE 1961

Wholesaler **ACTIVITIES**

Continued from page 62

"on-the-job" training sessions in various wholesale firms during the 24-month period.

Interested persons may write to NHAW, 1200 West Fifth Ave., Columbus 12, for additional information.

If the Ohio program is successful, plans will be made for an extension of this type of training throughout the country.

New Ucon deposit system gets money to wholesaler

There's no waiting for cylinder deposit refunds with a system introduced by Union Carbide Chemicals Co., Div. of Union Carbide Corp. A wholesaler fills out a Ucon "Speed-Draft" for a refund the same day he ships his empty cylinders.

This check, drawn on Union Carbide, may be deposited in the wholesaler's local bank. The system eliminates having funds tied up during shipment to, and during processing at, Carbide warehouses.

The wholesaler has control over cylinder deposits; paper work necessary for cylinder handling is reduced, and the need for a filler up system until deposit money is returned has been eliminated.

Wholesalers are requested to ship in lots of 200 lb. or more, taking advantage of minimum shipping rates.

Basic tool in the system is the combined manifold bill of lading and cylinder deposit refund check, all of which bear the same code number for easier record keeping.

American-Standard slashes prices on home products

Price reductions averaging 10% are in effect on the complete line of residential warm air heating and airconditioning products of Air Conditioning Div. of American-Standard.

NOW

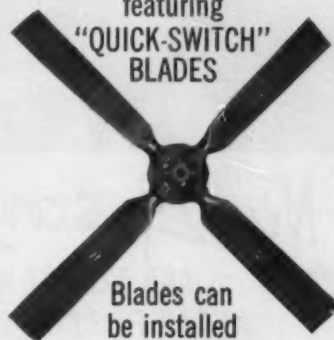
competitively priced!

NEW

Aeromaster
INDUSTRIAL COOLING

FAN

featuring
"QUICK-SWITCH"
BLADES



Blades can
be installed
after hub is mounted
on drive shaft

Performance, construction, and price make this the "best buy" in industrial fans! Delivers more CFM with less H.P. Features a ductile iron hub, removable blade retention caps, heat treated aluminum alloy blades with constant chord width and flanged ends. 4, 6 and 8 bladed fans available in 54" to 120" diameters. Maximum tip speed is 15,000 ft./min. Easy to install... easy to maintain. For complete details, write: KOPPERS COMPANY, INC., 5006 Scott Street, Baltimore 3, Md.



Aeromaster
Fans

Engineered Products Sold with Service

circle 42 on reader service card



Drayer-Hanson Air Conditioning

252 TIMES!

New 29-story Tower AND EXHIBIT HALL AT SAN FRANCISCO'S FAMED Fairmont Hotel

**D-H'S POPULAR SPOT-AIRE LRC'S SOON
IN ALL INDIVIDUAL ROOMS & SUITES!**

CREDITS: ARCHITECT: Mario Gaidano, AIA. ENGINEER: Edward Hill & Associates. AIR CONDITIONING CONTRACTOR: James A. Nelson Company. D-H SALES AGENT: E. C. Cooley Company.—All of San Francisco.

Request Brochure 150-07



drayer-hanson

DIVISION OF
HI-PRESS AIR CONDITIONING OF AMERICA, INC.
2301 Medford Street, Los Angeles 63, California
(Cable: Cliconi, Los Angeles)
circle 24 on reader service card

RECENT

Installations

Continued from page 20

spilled food, and sunlight because of their plastic and glass fiber surface.

Insulation properties of the doors keep temperatures at -10 F in the freezer and 35 F in the



cooler and garbage rooms. They are filled with foamed-in-place plastic that fills all voids and that bonds tight to all inside surfaces, increasing rigidity and strength, eliminating sagging.

Glass cuts cooling cost

DOUBLE-PANED INSULATING GLASS HAS been proved to save money on both airconditioning and heating in lower tonnage requirements and in lower operating costs at the Libbey-Owens-Ford Glass Co. building in Toledo, Ohio. Use of the "Thermopane" glass reduced cooling needs by 92 tons and thus initial cost by \$55,200; operating costs were cut \$2190 for air-conditioning and \$5030 for heating.

These findings are the result of a study of use of the glass on the building by Guy B. Panero Engineers, New York City. The 15-story building is of curtain wall construction, the outer walls being about 90% glass. Fixed windows, 1120 in all, are of the special glass and are 10' high and 5½' wide. Connecting spandrels are 3 x 5½'.

The engineering report also points out that if the difference in price between the double-pane glass and single-pane glass were considered as a 3% investment, it would be more economical to use "Thermopane" rather than single glazing. The savings of \$7220 in operating cost would pay for the premium grey double-pane glass in 3½ years, the engineers report. Green-tinted heat absorbing plate glass would have effected the same savings, the study says.



No compression problem with new Rigid Armaflex

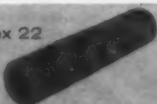
Here's a simple solution to the problem of insulation compression. It's familiar foamed plastic Armaflex in new form. It's rigid. It holds its shape at pipe hangers, underground, or in any other location where compression is likely to be a problem. Along with its load-bearing ability, Rigid Armaflex, like flexible Armaflex 22, stops condensation on cold lines operating down to zero and below and cuts heat loss on piping to 220 F.

Rigid Armaflex is the latest addition to a complete line of Armstrong Armaflex products, including flexible Arma-

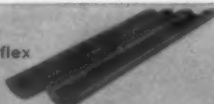
flex 22 tubing, Armaflex sheet for tanks, large pipes and fittings, and Armaflex Finish and Adhesives. The Armstrong Armaflex line is available through more than 300 leading wholesalers from coast to coast. For the address of one near you, and for full information on Armaflex insulations, write today to Armstrong Cork Company, 2206 Roth Avenue, Lancaster, Pennsylvania.

Armstrong INSULATIONS

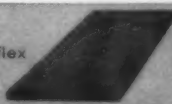
Armaflex 22



Rigid
Armaflex



Sheet
Armaflex

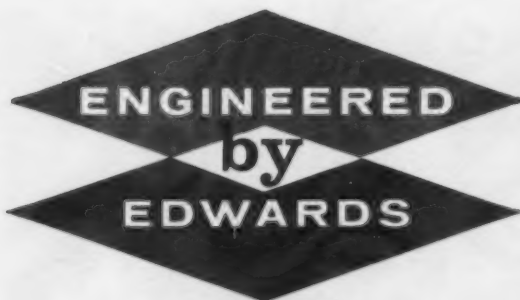


Armaflex
Finish



Armaflex
Adhesives

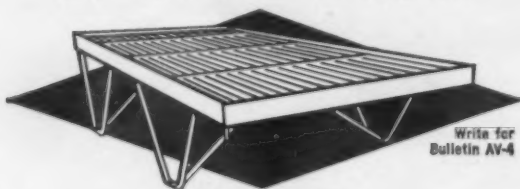




Write for
Bulletin TT-853

WATER COOLED COAXIAL CONDENSERS

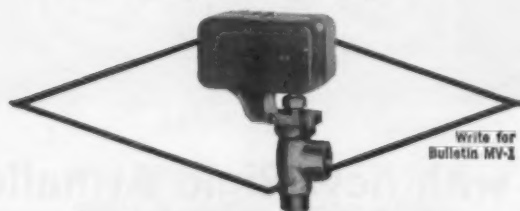
Domestic and sea water models
Reduce costs 40% . . . Reduce condenser water
35% . . . Reduce refrigerant charge . . . Stabi-
lize capillary performance . . . Compact shapes.



Write for
Bulletin AV-4

AIRVEC

The completely silent Air Cooled Condenser
Never needs cleaning



Write for
Bulletin MV-1

MOTORIZED VALVES

For chilled water cooling systems and for heat-
ing systems . . . 100% positive shut-off . . .
Compact . . . Low cost . . . Low Voltage . . . No
current draw when open.



**EDWARDS
ENGINEERING CORP.**
1043-5 ALEXANDER AVENUE
POMPTON PLAINS, NEW JERSEY
TEle 5-2803

"One of the nation's largest manufacturers of Residential and
Commercial Boilers, Baseboard and Steel-Fin Radiation, Motor-
ized Valves, Air and Water-Cooled Refrigerant Condensers."

circle 27 on reader service card

USEFUL Literature

Continued from page 28

CENTRIFUGAL FANS are discussed in three bulletins published by General Blower Co. Bulletin UVS JR 102 provides information, dimensions, and specs on Type BG "Util-A-Vent" direct-connected, belted, and portable models. Bulletin GP-100 gives performance data on Type GP volume centrifugal fans, while Bulletin GPE-100 has information on Type GPE pressure exhaust centrifugal fan.

circle 213 on reader service card

AVAILABLE IN 34 SIZES, the "Compact-Aire" year-round air-conditioner will meet your individual requirements, claims Mammoth Industries, Inc.'s Bulletin YR-161. It includes several cutaway sketches of the unit, 15 advantages, a page of sizes, specs, and capacities from five to 40 tons, optional features, and sections on the compressor and on the unitized frame.

circle 214 on reader service card

MOLECULAR SIEVE filter driers are the answer for efficient acid removal, claims Bulletin 276-A of Controls Div., American-Standard. It has nine tables of details on the sealed, adapter, "T" fitting, and replaceable cartridge types, adapter fittings, and cartridges. Seven photos and a page of performance data on pressure drop and drying capacity are also included.

circle 215 on reader service card

TREATMENT OF WATER in airconditioning systems is discussed in Pamphlet ASP-39 from Water Service Laboratories, Inc. There are sections on prevention of scale, chilled water circulating systems, refrigerating plants, control of the chemical treatment, and treatment of the water to prevent corrosion.

circle 216 on reader service card

FOR THE FIRST TIME in several years, Drayer-Hanson Div., Hi-Press Air Conditioning of America, Inc., has cataloged its complete lines in a handy brochure (GAC 150.01). It is the first issue released under D-H's recent purchase as a division by Hi-Press. The release carries the full product story on a broad range of airconditioning equipment, including extended surface coils, cooling towers, and high pressure units. It also has construction and performance data on each product.

circle 217 on reader service card

HANDY is the word for an 8-page condensed catalog (F-4471-8) on air distribution published by Barber-Colman Co. It allows designers of air distribution systems to quickly survey the wide range of equipment designs, sizes, finishes, and applications available from the company. Also included is information on new continuous line of extruded aluminum ceiling diffusers and modifications of continuous line diffusers with the "Uni-Flo" core.

circle 218 on reader service card

STRIP HEATERS, both general purpose and finned-type, are provided with descriptions, illustrations, and selection procedures in Bryant Electric Co.'s release C-300. The publication gives high and low temperature ratings, wattages, voltages, and dimensions for units with both terminals at one end and for those with one terminal at each end. Factors in the selection of strip heaters are broken down by all possible applications, and selection examples are given for a variety of uses. There is also a series of tables giving average specific heats and physical characteristics of common solids, liquids, gases, and vapors. Illustrative material consists of photos, drawings, diagrams, and graphs giving complete dimensions.

circle 219 on reader service card

JUNE 1961/THE REFRIGERATION & AIRCONDITIONING BUSINESS

OFFERED by Lennox Industries, Inc., is a brochure on the company's line of combination oil-gas industrial heaters. The release contains descriptions, technical data, and application photos of the various styles in which the line is available. Other tables provide dimensional data, air handling capacities, heat exchanger area, motor hp, additive cooling capacities, and plumbing data. One page contains diagrams of various arrangements possible when auxiliary equipment is added.

circle 220 on reader service card

RESIDENTIAL AIRCONDITIONING line is featured in four releases of York Div., Borg-Warner Corp. The brochures list photos, sketches, specs, and advantages of the "Twinline", "Pathfinder", "Champion", and "Comfort Center" models. Engineering advances and drawings also featured.

circle 221 on reader service card

TWO FOLDERS from Airtemp Div., Chrysler Corp., are now available. They are LL-482 on air- and water-cooled equipment and LL-480 on air-cooled central systems. Both contain application photos and sketches, as well as design, construction, and performance data. There's also a page of specifications, by model number, in each folder.

circle 222 on reader service card

FOR USE in airconditioning, heating, air handling, and processing systems, you should use "Ulok" cube-type replacement filters. That's what Bulletin B1 from Union Carbide Development Co. says. It also contains illustrations showing the cube's four main components and views of a typical filter bank. A data table lists the face area, depth, capacity, and resistance of more than 12 filter sizes. Three curves are given to illustrate pressure drop vs. air flow, pressure drop vs. dust fed, and efficiency of the filter vs. grams fed. Four product photos and an installation data chart by nominal face area in inches complete the literature.

circle 223 on reader service card

ALUMINUM MOTORS from Franklin Electric Co., Inc., are now available in single phase and polyphase, from 1 to 7½ hp, says Publication P-86035-AU. The brochure illustrates and describes the integral motor. It also has specifications and availability tables as well as special construction features. There are numerous color photos, a page of specs on the four types of the motor, and a table of options furnished in the frames.

circle 224 on reader service card

ALL PERTINENT DATA, including dimensions, capacities, and sound classifications on Type L-CRF power roof ventilators is available in Bulletin DB3-200 from Ilg Electric Ventilating Co. The bulletin supersedes Bulletins 2701 and 2701S. It also includes data on four larger sizes, 270 to 365, and various sizes of Type CWF wall exhaust fan.

circle 225 on reader service card

A MANUAL on silver brazing alloy, Catalog 925, has been published by Air Reduction Co., Inc. The release contains many photographs, sketches, charts, and diagrams as well as information on these topics: silver brazing procedure and its advantages, selection of base and filler metals, prebrazing cleaning, design and assembly of brazed joints, post-brazing cleaning and related operations, tool tipping and repairs, and gas atmospheres.

circle 226 on reader service card

A 2-SECOND MOMENTARY on pulse and off pulse is the feature of Tork Time Controls, Inc.'s Bulletin 80 on the new "momentary contact" time switches. Other features are wiring diagrams for the automatic control of mechanically-held contactors and of low-voltage relays. The literature also contains available dial types, switch ratings, dimensional drawings of enclosures, and uses of various control models by timing motor voltage, switching, and switch rating.

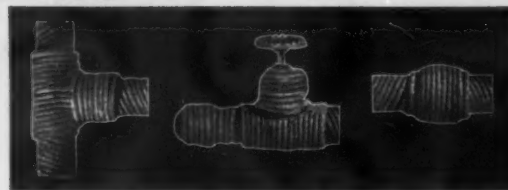
circle 227 on reader service card

THE REFRIGERATION & AIRCONDITIONING BUSINESS/JUNE 1961



1 INSULATION FITS EVERY SIZE PIPE... ANY TYPE FITTING

Mortell NoDrip TAPE



No tools. No vapor-seals, no fasteners, brads or adhesives. Wrap NoDrip Tape spirally around any size pipe, joints, tees, valves, angles . . . and the job's done! NoDrip Tape is a pliable, cork-filled, self-adhering product. Forms a permanent air-tight, 100% vapor- and moisture-proof jacket. Stops condensation drip, sweating, frost. Ends rust and corrosion.



MORTELL NoDrip PLASTIC COATING

. . . For big areas, large pipes, tanks, air ducts. Another fine Mortell refrigeration product. Applies with brush or trowel to metal, concrete, brick, plaster, tile or composition surfaces. Permanently stops condensation, rust, corrosion.

Mortell COMPANY

Makers of Mortite Caulking Cord and Mortite Caulking Gum

.....

Mortell Company
 546 Burch St., Kenosha, Ill.
 Please send full information about the complete line of Mortell refrigeration products.

I am a Jobber ☐ Dealer ☐ Serviceman ☐

Name _____
 Firm _____
 Address _____
 City _____ Zone _____ State _____

.....

circle 55 on reader service card



Who Discovers the Discoverers?

"A professor can never better distinguish himself in his work than by encouraging a clever pupil, for the true discoverers are among them, as comets amongst the stars." CARL LINNAEUS

Somewhere in this mighty land of ours, a gifted youth is learning to see the light of tomorrow. Somewhere, in a college classroom or laboratory, a dedicated teacher is gently leading genius toward goals of lofty attainment. Somewhere the mind of a future discoverer—in science, engineering, government, or the arts—is being trained to transcend the commonplace.

Our nation has been richly rewarded by the quality of thought nurtured in our colleges and universities. The caliber of learning generated there has been responsible in no small part for our American way of life. To our college teachers, the selfless men and women

who inspire our priceless human resources, we owe more than we will ever be able to repay.

Yet how are we actually treating these dedicated people? Today low salaries are not only driving gifted teachers into other fields, but are steadily reducing the number of qualified people who choose college teaching as a career. At the same time, classrooms are beginning to get overcrowded. In the face of this, college applications are expected to double by 1967.

This is a severe threat to our system of education, to our way of life, even to our very existence as a nation. Our colleges need help—and they need it now!



If you want to know more about what the college crisis means to you, and what you can do to help, write for a free booklet to: HIGHER EDUCATION, Box 36, Times Square Station, New York 36, New York.

Sponsored as a public service, in cooperation with the Council for Financial Aid to Education





Don't blindfold him!

THE MAN in this picture is a cancer research scientist. The device he is using looks like something out of science fiction—but actually, it's an electron microscope. It shows the sub-microscopic detail of a cancer cell—magnified 100,000 times. *The cost of one electron microscope is \$35,000.*

Some of the equipment needed for cancer research is even more expensive.

Today, in research centers throughout the country, 1300 scientists, supported by American Cancer Society funds, are at work searching for the cause of cancer—and, ultimately, ways to prevent it.

The American Cancer Society grants millions of dollars for research on such projects as the study of viruses as a possible cause of cancer—the development of hormone treatments for cancer—the control of cancer by drugs. *Life-and-death projects.*

Your help is needed to enable the American Cancer Society to continue this support.

Don't blindfold cancer research. Give to it. Send your contribution now, to **CANCER**, c/o your local post office. All gifts are tax-deductible.

AMERICAN CANCER SOCIETY



Product DATA

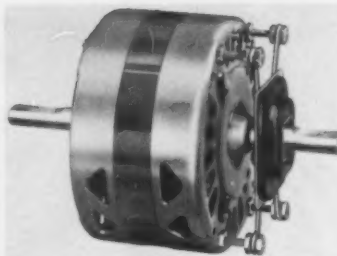
Continued from page 24

Fractional horsepower motor

Product: Type AR fractional horsepower motor.

Manufacturer: Distributors Div., Redmond Co., Inc., Owosso, Mich.

Features: Will solve problem of replacing motors in airconditioners using square-type mountings. Replacement of



burned-out motor simple as no base needed and new motor fits into base in unit. Adjustments simple as nut placed at desired spot on through bolts and

tightened. A 6-pole shaded pole motor with horsepower range of 1/10 through 1/6, motors available in single- and 2-speed, 115 and 230 v., 1050 rpm.

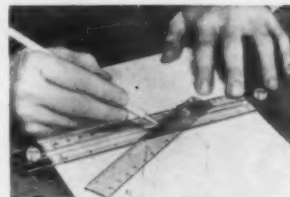
circle 145 on reader service card

Drafting tool

Product: Portable drafting tool ("Poly-angle").

Manufacturer: Country Engineering, Inc., Darien, Conn.

Features: With standard pad, provides complete drafting facilities, and adjusts to pad for accurate field sketching or drawing to scale. Main scale slides to



give parallel horizontal lines, spring-loaded angle arm can be snapped into position of 30, 45, 60, 90, 120, 125, or 150 degrees above or below horizontal. Arm sets to angles, remains in position, and can be moved horizontally while keeping angle setting. Of high strength polystyrene, is color tinted to contrast with pad.

circle 146 on reader service card

Centrifugal fan

Product: Belt- and direct-drive centrifugal fan (Types BG, FC, GP, GPE).

Manufacturer: General Blower Co., Morton Grove, Ill.

Features: Type BG "Util-A-Vent Jr." Series is direct-drive model in five sizes and 14 capacities. Type FC belted units in two models with adjustable V-belt drives when speed adjustments required. Type GP volume fan for exhausting fumes and in four sizes and nine capacities. Type GPE pressure exhaust fan in four direct and three belted sizes.

circle 147 on reader service card

Airconditioner engine

Product: Overhead valve and L-head type engine for all types of airconditioners.

Manufacturer: Continental Motors Corp., Muskegon, Mich.

Features: Runs on all fuels including diesel oil and natural gas. Has normalized alloy crankcase cast integral with cylinder block and reinforced and ribbed to prevent distortion; dropforged and heat-treated alloy steel crankshaft with induction-hardened journals; individual porting; stellite-faced intake and exhaust valves with individual rotators. Cooling on all but two series by standard water pump, fan belt driven. Other series, vapor phase cooling eliminates pump. Proper oil level maintained from reserve oil tank with capacity for 2000 hours operation. Also has safety con-

Continued on page 82



EXPANSION VALVE FREEZE-UP?

...call on the *Genie* in your bottle of **THAWZONE**

Many a "defective" expansion valve works perfectly again with the addition of a little Thawzone to the refrigerant.

This is one of the reasons why you should take it on every job and use it in every installation charged with the modern fluorine refrigerants (Freon, Genetron, etc.), or with methyl chloride, methylene chloride or isobutane.

For Thawzone contains a chemical genie that effects wonders in curing and preventing trouble in refrigeration and air conditioning systems. It's easy to use, economical: 1/4 ounce treats a pound of refrigerant.

- eliminates freeze-ups
- minimizes corrosion and copper plating
- helps keep expansion valve free of sludge and rust
- destroys trouble-causing moisture
- scavenges out oxygen



Ask your refrigeration wholesaler today for Thawzone and the free Thawzone Service Manual.

THAWZONE

HIGHSIDE CHEMICALS INCORPORATED
4 Colfax Avenue • Clifton, New Jersey

circle 33 on reader service card

TWO OTHER AIDS FOR BETTER REFRIGERATION SERVICE



TRACE

—the simple, fast way to pinpoint refrigerant leaks... a positive leak tag.

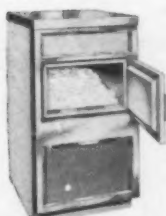


Leak Lock

—the joint sealer engineered for refrigeration use.

*World's
Largest
Line!*

*World's
Largest
Seller!*



SuperFlaker Model DF-4. Makes up to 100 lbs. of perfect crushed ice daily. Stores 40 lbs. in self-contained insulated bin.



SuperFlaker Model SF-8. Makes a continuous supply of up to two tons of crushed ice daily... Ideal for volume ice users! Takes only 5 sq. ft. of floor space.



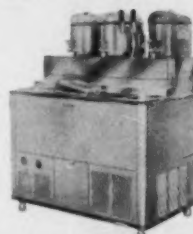
Super Flaker Model SF-2F. Produces a continuous flow of up to 550 lbs. of crushed ice daily. Similar models are also available with daily capacities of 350, 1050 and 2000 lbs.



Super Bin with Super Flaker. Choose among 16 models designed as companion units for Scotsman Super Flakers. Model shown stores 750 lbs. of ice.

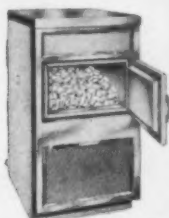


Super Flaker Model SF-3W-SFA. Makes up to 1050 lbs. per day, stores 350 lbs. Similar models make 200, 350 and 550 lbs. daily.



Model SD-2. Handy drink dispenser makes and stores its own ice... up to 550 lbs. per day! Single-head model also available.

Modernize with Modern Ice... Step up to a **SCOTSMAN!**



Super Cuber Model DC-3. Makes up to 50 lbs. of perfect cubed ice daily. Stores 35 lbs. in self-contained insulated bin.



Super Cuber Model SC-200F. Makes up to 225 lbs. per day, stores 150 lbs. Similar model makes 110 lbs., stores 75 lbs.



Super Cuber Model SC-500E. Makes up to 500 lbs. of 100% pure Super Cubes daily. Stainless steel bin stores 400 lbs. of ice.

MAIL COUPON TODAY!

SCOTSMAN

Modernize with Modern Ice!

ICE MACHINES



YES! Send me complete information about a franchise for Scotsman Ice Machines.

NAME

ADDRESS

CITY ZONE STATE

MAIL TO: **SCOTSMAN ICE MACHINES**
Queen Products Division of King-Seeley Thermos Co.
196 Front Street, Albert Lea, Minnesota
EXPORT OFFICE: 15 William St., New York, N.Y.

circle 71 on reader service card

SNIFTER KEEPS KEROTEST QUALITY UP TO SNUFF!



LEAKPROOF CONSTRUCTION

By passing the probe of this electronic leak detector along the joints and seams of the valve, the Kerotest laboratory technician can spot a leak as minute as 1/100 of an ounce per year. To simulate actual in-line use during the test, the Kerotest packed globe valve being checked out here is fed a tracer gas and subjected to 290 psi.

Kerotest employs more than a half dozen routine quality control tests on raw materials and in manufacture and final valve assembly. It's one of the important reasons why Kerotest valves last longer, perform more efficiently and economically.

**ASK FOR KEROTEST VALVES
AT YOUR LOCAL WHOLESALERS**

KEROTEST MANUFACTURING CO.

2504 Liberty Ave. • Pittsburgh 22, Pa.



KEROTEST R12 PACKED GLOBE VALVE

The high quality brass valve for all types of refrigeration and air conditioning systems, nitrogen, oxygen (degassed), compressed air and liquefied petroleum gases.

Specify and use the R12 packed globe valve for operating pressures up to 500 psi and temperatures up to 200° F.

KEROTEST QUALITY CONTROLLED FEATURES

- Generous areas assure ample flow
- Swivel type self-compensating seat
- Leak-lok bonnet design
- Repacks under pressure
- Positive shut-off
- Quick seating disc for easy operation

R12 series 1½" through 2½" forged brass
R10 series 2½" through 4½" cast brass

KEROTEST

circle 39 on reader service card

Product DATA

Continued from page 80

trols to stop engine in case of high water temperature or low oil pressure, and 110 v. ac starting.

circle 148 on reader service card

Air filter

Product: "Trimtex" glass fiber air filter.

Manufacturer: Drico Industrial Corp., Passaic, N.J.

Features: Is chemically treated to give it a bacterial barrier that resists germs, mold, and mildew. Is laminated to form a rigid, frameless, self-supporting filter guaranteed against fiber break-off. Can be trimmed to size with scissors to fit units and one side is tinted blue to indicate air intake side. Shipping carton perforated on three sides so can be easily opened to form self-service floor display unit.

circle 149 on reader service card

Electronic air cleaner

Product: Electronic air cleaner for commercial rooms up to 5000 cu.ft.

Manufacturer: Electro-air Cleaner Co., McKees Rocks, Pa.

Features: In portable, plug-in floor and suspended ceiling models. Removes



dirt and smoke and activated charcoal after-filter removes odors, with unit powered by 1000 cfm blower.

circle 150 on reader service card

Electrostatic precipitator

Product: Electrostatic precipitator with flat collector plate.

Manufacturer: Industrial Div., American-Standard, Detroit, Mich.

Features: Plate has pockets which trap and hold dust, reducing reentrainment, and has these advantages: improved sparking voltage, increased migration velocity of dust particles to plate,

Continued on page 85

two hours with another detector . . . then

"In Just Two Minutes My H-6 Spotted The Leak"

—says Mr. Erwin Beardslee (shown below)
Beardslee Refrigeration-Air Conditioning
Elmira, New York.

Typical of thousands of satisfied General Electric H-6 halogen leak detector users, Mr. Erwin Beardslee has been able to speed up his refrigeration service.

"We had a leaking self-contained freezer. Two hours with our old type detector failed to show any leak. Then I tried the G-E Type H-6. Two minutes later we had pinpointed a leak in the air-cooled condenser. Thanks to my H-6 I can now reach more customers per day with faster, more dependable refrigeration-air conditioning service."

Here's why refrigeration engineers and servicemen, like Mr. Beardslee, appreciate the ruggedly portable H-6. When the hand-held detector senses a leak, a probe light *instantly flashes*, pinpointing the leak. And, with the H-6 you locate leaks *faster . . .* it probes from 60 to 100 inches per minute. Adjustable H-6 sensitivity lets you set minimum leak level . . . even leaks as small as $\frac{1}{4}$ ounce per year are detected quickly, positively, and *economically*. Best of all . . . when used in confined areas, the H-6 gives you more protection than other methods.

Don't delay another day. Check into the benefits of fast, dependable electronic leak detection and start "profiting" with the compact, lightweight General Electric H-6. Get the full story from your local air conditioning and refrigeration wholesaler . . . ask him about the new, convenient H-6 finance plan . . . or, clip the coupon below and send directly to Section B598-05, General Electric Co., Schenectady 5, N. Y.

INSTRUMENT DEPARTMENT

GENERAL  ELECTRIC



Find out for yourself why
Distributor Dan says you save
time, increase profits with a
G-E Type H-6 leak detector . . .
clip coupon and send today.



General Electric Co.
Section B 598-05
Schenectady 5, N. Y.

Please send by return mail, Bulletin GEA-6827,
on "The Type H-6 Leak Detector."

NAME _____

TITLE _____

COMPANY _____

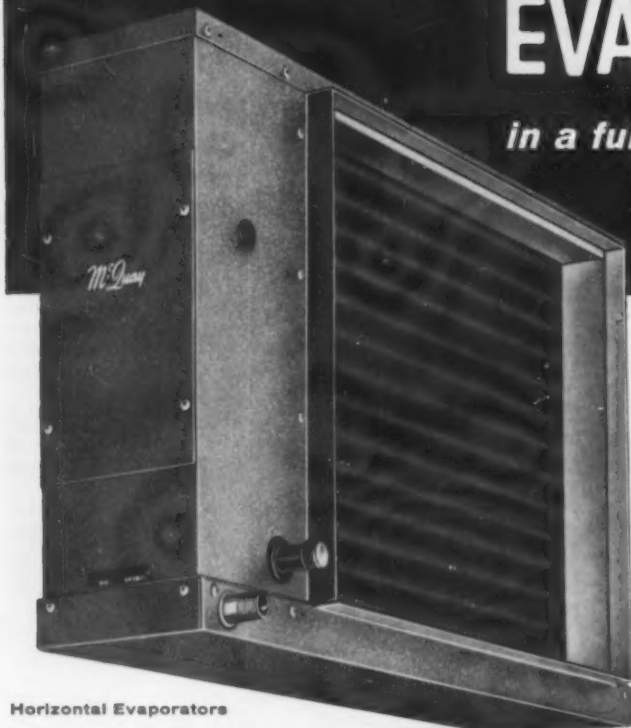
ADDRESS _____

circle 31 on reader service card

vertical or horizontal

RESIDENTIAL EVAPORATORS

in a full range of sizes



Horizontal Evaporators

Vertical Evaporators with
sliding removable
coil section



McQuay
Means Quality

Residential air conditioning with complete dependability is only one of many features you can expect with McQuay residential evaporators. Designed for either horizontal duct mounting or vertical mounting in the warm air outlet of up flow or counter flow furnaces, their wide flanges and compact dimensions simplify installation in any warm air heating system.

There is a McQuay horizontal or vertical residential evaporator to meet the needs of every home in any climate in 2—3—4—5 and 7½ ton nominal capacities. Quality constructed with patterned aluminum casings completely insulated, these McQuay evaporators will harmonize with any surroundings.

For complete information contact your nearest McQuay wholesaler or write to McQuay, Inc., 1643 Broadway N. E., Minneapolis 13, Minnesota.

*McQuay Evaporators
Utilize Furnace Blowers*

McQuay INC.

AIR CONDITIONING • HEATING • REFRIGERATION



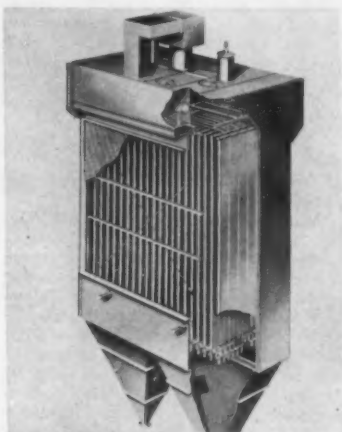
circle 52 on reader service card

JUNE 1961/THE REFRIGERATION & AIRCONDITIONING BUSINESS

Product DATA

Continued from page 82

less turbulence as pockets give shielded entrainment area, and easier pneumatic or electric rapping. Has either silicon, selenium, high voltage vacuum tube, or mechanical high voltage rectifier. Con-



trol can be saturable reactor, monocyclic network, or resistor type. The non-welded, roll-formed plate construction cuts warping and produces flatness to allow its effective application where resistivity is high.

circle 151 on reader service card

Refrigeration system

Product: "Thermobank"-compressor refrigeration system.

Manufacturer: Kramer Trenton Co., Trenton, N.J.

Features: Is a packaged refrigeration system with re-evaporative hot gas defrost. In sizes from 1 to 75 hp and covers temperatures from 45 to -20 F. All components except evaporators factory-assembled, wired, run-in, and enclosed in outdoor aluminum housing. Company Btu rating tables permit rapid selection of entire compressor-evaporator system, eliminating design, installation, and cost estimating errors. Will operate year-round outdoors without seasonal adjustment. All controls, valves, and service connections easily accessible and system's compressors will fit any building design yet light and inconspicuous enough for roof-mounting.

circle 152 on reader service card

Intake-relief ventilator

Product: Model MC glass fiber intake and relief ventilator.

Manufacturer: Williams-Bermuda Corp., Los Angeles, Calif.

Features: Throat-opening sizes of unit range from 10 to 60", either square or rectangular, and available in 12 colors.

Bird screens, all types of dampers, and other accessories available. Features low profile, contemporary design, complete weather resistance, and design flexibility. circle 153 on reader service card

Pass-thru display case

Product: "Viewmatic" pass-thru cafeteria display case.

Manufacturer: Bastian-Blessing Co., Chicago, Ill.

Features: Can be filled from rear and cold food removed from front. Glass doors are self-closing and fluorescent light illuminates interior. Colored plastic laminate inserts factory-installed at top

and bottom. Glass ends and curved glass sneeze guard optional. Air flow designed rear brackets and curved front brackets match rounded contours of other food protectors and display shelving. The 4' case can be mounted above a cold pan, requiring no counter space. circle 154 on reader service card

Defrost heater

Product: Defrost heating element.

Manufacturer: Heatrex, Inc., Meadville, Pa.

Features: For use on reefer trucks and railroad cars, environmental testing of

Continued on page 86

WHOLESALE-RESIDENTIAL

NOW ... CARRY CONNOR, THE COMPLETE LINE TERRITORIES AVAILABLE



KNO-DRAFT all-aluminum diffusers, grilles, registers ... competitively priced with steel-made lines

DOREX Type R Air Purification Panel ... for use with standard dust filters

Connor Engineering Corporation, with more than 40 years experience in the design and development of air distribution equipment, offers a complete line of air diffusers of all types, for all industrial, commercial, and residential applications. Complete and priced to compete! And this comprehensive, long-respected air distribution package is now available in protected territories. As a plus value, Connor also

offers its Dorex Type R Air Purification Panel, a semi-disposable, activated carbon filled unit for use with standard dust filters.

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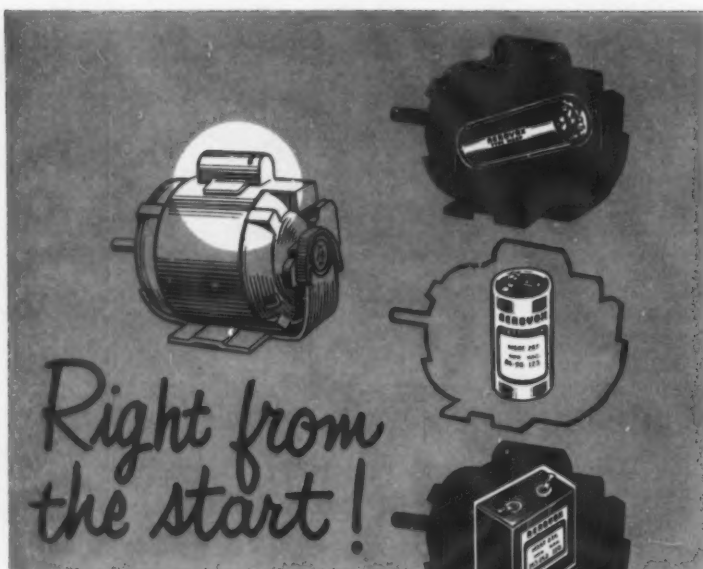
DANBURY, CONNECTICUT

☐ Send me further information on your distributor arrangement and the territories available.

☐ Send me descriptive literature on your product lines available to distributors.

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COMPANY _____
STREET _____
CITY _____
STATE _____

circle 21 on reader service card



AEROVOX MOTOR-START CAPACITORS

For motor-start capacitors that "stay-on-the-job" longer you'll be right from the start if you specify and use Aerovox AC capacitors. Time is money, and you'll save both time and money because Aerovox has the voltage and capacitance combination you need for that repair job.

The pioneer manufacturer in the AC capacitor field, Aerovox today supplies all the leading motor, refrigerator and air-conditioning manufacturers with the major portion of their capacitor requirements. You too can count on Aerovox's advanced engineering techniques and experience everytime you use an Aerovox AC Capacitor.

No need to hunt all over town for the right replacement, your local Aerovox Distributor stocks the complete line of Aerovox AC capacitors in motor-start and motor-run types for off-the-shelf delivery. Right now he has a copy of Aerovox AC catalog (MS 59-10) reserved for you. It's yours FREE for the asking only from your local distributor. Write today for the name and address of the Aerovox Distributor closest to you . . .



AEROVOX CORPORATION

DISTRIBUTOR DIVISION

NEW BEDFORD, MASSACHUSETTS

circle 3 on reader service card

Product DATA

Continued from page 85

metal, food, commercial refrigerators, and display cases. Is activated by clock or door opening mechanism in refrigerators, and thermostatically controlled in reefer railroad cars. Is equipped with odor and taste free molded neoprene sealed ends. In sizes larger than standard 1 1/2" dia. size and any size can be preformed or shipped in fully annealed coil form.

circle 155 on reader service card

Air diffuser

Product: "Stripline" extruded aluminum slot-type air diffuser.

Manufacturer: Air Devices, Inc., N.Y., N.Y.

Features: Has separate plaster frames and removable cores for heating-cooling applications. In two styles of frames and three types of cores with diffusing vanes for ceiling, sidewall, or window sill installations. Made in sections or can be used as a continuous unit by butting sections together with built-in interlocking feature for perfect alignment. Coil spring lock eliminates screws and screwholes.

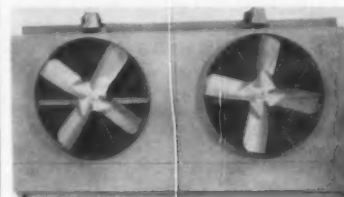
circle 156 on reader service card

Cooling tower

Product: Model EC-120 cooling tower with horizontal double-fan discharge.

Manufacturer: Halstead & Mitchell Co., Pittsburgh, Pa.

Features: Has nominal rating of 120 tons, based on capacity of 360 gpm at 95 F entering water, 85 F leaving water,



and 78 F wb. Fans draw air from open back through wetted deck surface. Has electrically-welded 14-gage steel although 10-gage steel housing optional. Shipped assembled.

circle 157 on reader service card

Aluminum air vent

Product: "C/S" cast aluminum brick size air vent in 18 modular sizes.

Manufacturer: Construction Specialties, Inc., Cranford, N.J.

Features: For use as air intake or exhaust for unit airconditioners and gives rugged vent which fits into exterior wall module in standard and jumbo brick, and cinder or concrete block construction.

Continued on page 88



NEAT-AS-A-PIN REFRIGERATION with Krack Automatic Electric Defrost Units at Miller Packing Company

The above reproduction from an unretouched photograph supplied by George F. Miller, owner of the Miller Packing Company, Kokomo, Indiana, is visible proof of frost and icicle-free refrigeration.

"The excellent performance record of Krack units used in the original building was one of the major reasons for selecting more Krack units when our new storage room was added" says George F. Miller.

The BUC-ED low temperature units maintain temperature and humidity at a constant

level to keep meat, poultry and frozen foods at peak freshness.

Advantages in Selecting Krack Equipment

You save installation and maintenance costs because Certified Capacity Ratings guarantee equipment that matches the job. You gain advantage of lower bidding . . . no need to specify oversize equipment.

And what's even more surprising is the low price. This is made possible because of Krack's 30 years of engineering and production experience in electric defrosting.

Send coupon or phone today . . . see how KRACK equipment can give you refrigeration dependability at low production unit cost.



Manufacturers of Freon
or Ammonia, Recirculated,
Flooded or Direct
Expansion Heat Transfer
Equipment

**REFRIGERATION
APPLIANCES, INC.**

**FREE
BULLETIN
BUC-ED-120**

gives you
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data

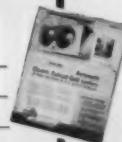
REFRIGERATION APPLIANCES, Inc.
905 Lake St., Chicago 7, Ill., Phone: MOntree 6-1141

Name

Firm

Address

City Zone State



circle 66 on reader service card

Product DATA

Continued from page 86

Two new fuel oil vents, furnished with standard pipe threading for 2 and 3" vent pipe connection, for use as fuel oil ventilators and volatile storage tanks. Supplied with aluminum wire screening and special finishes, duct extensions, grilles, and registers available.

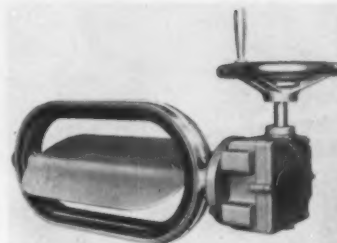
circle 158 on reader service card

Butterfly valve

Product: Obround shutoff butterfly and control valve (Series K).

Manufacturer: W. S. Rockwell Co., Fairfield, Conn.

Features: For rectangular and flat oval ducts for industrial and process ventilation and airconditioning. Is easily adaptable with application of simple transitional fittings. Has 1-piece aluminum body of small face-to-face dimension and body has replaceable rubber or synthetic resilient elastomer liner against which oval aluminum disc seals for tight closure. Throttling and shutoff controllable by lever, hand wheel (shown), or automatically by pneumatic



cylinder, diaphragm operator, or electric motor. Dial indicates position of disc and valve positioner may be included for automatic control. In 14 sizes from 3 x 7" to 20 x 30".

circle 159 on reader service card

TYPE 56

First choice of Manufacturers!

A condenser water regulator with a smashing success story! In three short years the Type 56 Condenser Water Regulator has soared to top choice of the industry—top choice of foremost manufacturers of refrigeration equipment, engineers, contractors, service men. Reasons? Just to mention a few:

Wide range—Instantly adjustable to either R-12 or R-22 without changing springs—by simply turning knurled cap. (Setting easily made tamper-proof when desirable.)

Fits in—Small, but plenty of capacity, smoothest modulation, remarkable flow characteristics.

Marsh quality throughout—Monel seat beads that minimize wire drawing; leak proof bellows; provision for manual flushing after installation. More efficiency; more range; more downright value! Bulletin gives full details.

Your wholesaler stocks it!

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Division of Colorado Oil and Gas Corporation
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MARSH

Refrigeration Instruments

Gauges • Thermometers • Valves

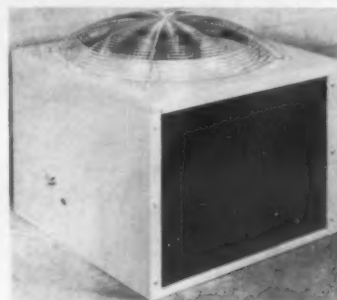
circle 50 on reader service card

Condensing unit

Product: Air-cooled condensing unit (Model, 1202-03).

Manufacturer: Airtemp Div., Chrysler Corp., Dayton, Ohio.

Features: Operation capabilities at outside temperatures of 120 F and at reduced voltage up to 10%. Evaporator fan relay allows continuous operation of indoor fan for circulation or fan operation



only when compressor running. Also has a sub-cooling circuit, factory-wired control panel that eliminates all wiring except running power line to control panel, zinc coated, bonderized cabinet construction, and rustproof resisting shaft on blower motor. Is 25-5/16" high and 29" wide and deep and weighs 220 lb.

circle 160 on reader service card

Replacement motor

Product: Replacement motor in 24 models.

Manufacturer: General Electric Co., Schenectady, N.Y.

Features: Has adjustable mounting adapter on motor's extended through-bolts so can be adjusted axially along motor shaft. Included with both permanent split capacitor motor and shaded pole motor are 2 1/2" dia. mounting rings which are assembled on motor and mounting adapter. Extra ring adapters available for 2 1/2" dia. resilient base mounting needs. Standard on all models are 25" leads as are extra long double shaft extensions with maximum length flats. Shafts can be cut to desired length or to single shaft requirements. Shafts' finish helps protect against corrosion and

Continued on page 91



how to use gas-fired duct furnaces most profitably



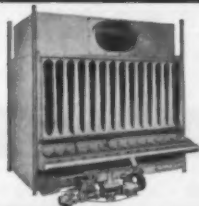
Free from Reznor: the third in a series of new Reznor Heating Handbooks, "Commercial and Industrial Applications of Duct Furnaces."

Duct furnaces offer a relatively new way of heating through air distributing systems. They provide all the economies of direct fired heaters, yet may be located at a distance from the space to be heated. Installation is easy — just connect gas pipe, power, and a vent.

To use duct furnaces most advantageously requires some knowledge of special considerations involved in specific commercial and industrial applications.

That's the purpose of this new handbook, published by Reznor, the world's largest manufacturer of gas unit heaters. It tells about the various ways Reznor duct furnaces can be used for heating or in combination with cooling systems. Also included are illustrations, load calculating data, and practical suggestions to help you get better heating at lower cost.

For your copy, mail the coupon to Reznor. And for more information on Reznor heaters, call your distributor or nearby district office listed in the Yellow Pages under "Heaters-Unit".



REZNOR HEATERS

REZNOR MANUFACTURING COMPANY
Dept. RAC-6, Mercer, Pa.
Send me a copy of "Commercial and Industrial Applications of Duct Furnaces".

name _____ title _____
company _____
address _____
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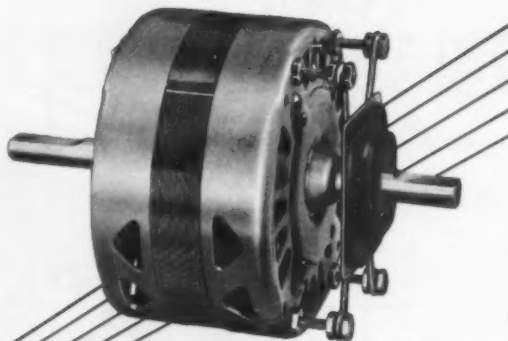
HIKE YOUR PROFIT LINE—

WITH Redmond's

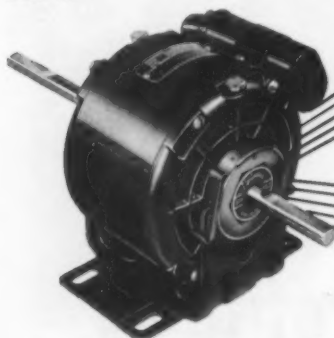
COMPLETE LINE OF AIR CONDITIONING REPLACEMENT MOTORS

Here's the most complete line of air conditioning replacement motors in the industry. Sales and service profits will really climb because these motors increase your replacement market.

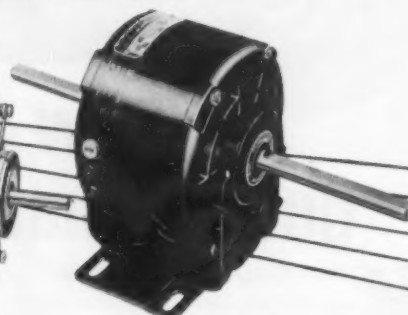
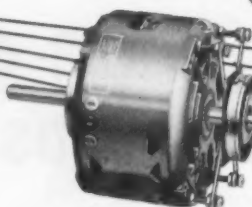
They're dependable, quiet, fool-proof—and they'll meet all of your requirements for replacing motors in room air conditioners with from 1/3 to 3-ton capacities. A full range of bases is available for base-mounted motors. For complete details on these easy-to-sell, simple-to-install motors, send for the free folder shown below.



• Redmond's new Type AR shaded pole motor replaces smaller motors in older model air conditioners. No adjustments or alterations needed. No new base required. The AR fits right into the base now in the unit—quickly, simply. Has "quick adjust" feature.

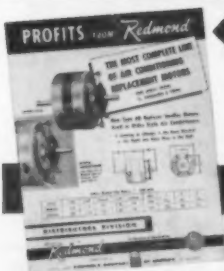


• The Redmond Type CY is a permanent split capacitor motor combining higher starting torque with increased efficiency. Operates on very low current, hence is cooler-running, more economical. Is totally enclosed for protection against high humidity.



• The AY by Redmond is available both as a base-mounted motor and with a "quick adjust" feature. Each type has drip-proof stator, with top half of motor enclosed, to guard against moisture. Easy to install because you just mount it in and plug in the leads. No wires to get in your way. Adjustable end mounted motors require only two simple adjustments to fit into most bases.

DISTRIBUTORS DIVISION



◀ **Send For FREE FOLDER** containing complete information on Redmond's money-making line-up of replacement motors for room air conditioners. Ask for "PROFITS FROM REDMOND."

Redmond

Company, Inc.

The Standard of Dependability

OWOSSO, MICHIGAN



COOKSVILLE, ONTARIO • **CONTROLS COMPANY**



OF AMERICA • ZUG, SWITZERLAND

circle 65 on reader service card

Product DATA

Continued from page 88

simplifies removal of attached fans or blowers. Permanent split capacitor motor in 6-pole models from 1/15 through 1/4 hp, 115 or 230 v. Shaded pole model in 4-pole models, 1/8 through 1/4 hp, 115 or 230 v., and in 6-pole models from 1/10 through 1/4 hp, 115 or 230 v.

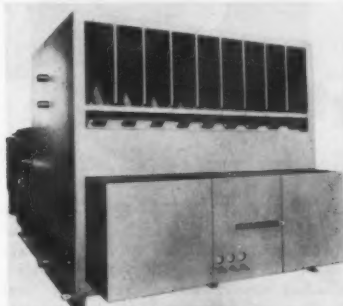
circle 161 on reader service card

Multizone package unit

Product: "Multi-temp" CMC Series package unit.

Manufacturer: Worthington Corp., Harrison, N.J.

Features: Is immediately available and combines ultimate in package design features with engineered application



flexibility. New series consists of three models having a cooling capacity range of 30 to 35 tons, and a full choice of heating coils having adequate heating zone controls for heating, cooling, or combination of both.

circle 162 on reader service card

Ice flaker

Product: Flaked ice machine (Model RF-351-SC).

Manufacturer: Ross-Temp, Inc., Chicago, Ill.

Features: Is self-contained, completely automatic, and produces 250 lb. of flaked ice each day at 90 F air and 70 F water conditions. Features removable, hermetically sealed refrigeration system from front of unit. Extra large storage bin, insulated with glass fiber, contains 160 lb. of ice at all times. All controls recessed and unit is 38" high although can be dropped to 34" with adjustable legs. In standard pearl gray baked hammer-oid enamel or in stainless steel finish.

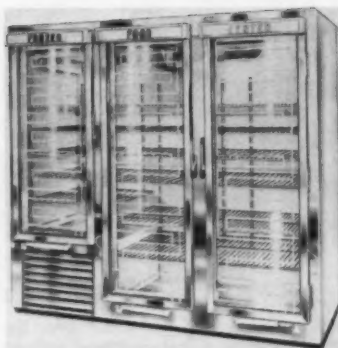
circle 163 on reader service card

Upright freezer merchandiser

Product: Upright frozen food merchandiser (Model RF-72-GA).

Manufacturer: Fogel Refrigerator Co., Philadelphia, Pa.

Features: Has "Sel-A-Vision" self-



closing doors. Other features—no plumbing on unitized self-contained models, illuminated sign canopy with removable plastic inserts, adjustable shelves, complete inventory control, wide range of sizes, savings up to 77% in floor space. Also guarantee door will not sweat.

circle 164 on reader service card

Compact refrigerator

Product: "Chill-Air" Model PR-6 compact room refrigerator.

Manufacturer: Erickson Industries, River Falls, Wis.

Features: Available as built-in, port-

Continued on page 92

WARM WEATHER WARNING!



Be ready for the Summertime Boost in Air-conditioning, Refrigeration, and Motor Servicing . . . Get these 2 great aids to capacitor replacement NOW!

SPRAGUE CATALOG C-914

Twenty pages filled with useful information on capacitor-start and capacitor-run motors, valuable data on capacitor rating selection, complete listings of Sprague AC Capacitors, and a comprehensive Interchangeability Guide for Motor-Starting Capacitors including Sprague and ten other manufacturers.

Write for your FREE copy today!

SPRAGUE MODEL MIKE-O-METER®

A capacitor tester designed specifically for motor service technicians. This handy little instrument weighs only 6 lbs.—it goes where you go! A twist of a dial tells you whether capacitors are good or bad, measuring capacitance and power factor by the accurate Wien Bridge method.

Built for rugged service, the components inside the sturdy steel case are especially chosen for long, dependable life. Complete with operating manual, the M-2 has a net price of only \$32.50

Order yours NOW for the Summer Season!



Sprague Products Company
53 Marshall Street
North Adams, Mass.

World's Largest Capacitor Manufacturer

SPRAGUE®
THE MARK OF RELIABILITY

circle 73 on reader service card

Product DATA

Continued from page 91

able, or free-standing unit. Has 2.7-cu.-ft. capacity and six ice cube trays provide 108 cubes. Interior of stainless steel and has decorator panels of matched colors, embossed metals, wallpaper, and fabric. Has $\frac{1}{2}$ -hp compressor sealed in steel and moving parts floated in lubricating film, and condenser with forced



air moving across fins and tubes. Exterior cabinets of baked enamel in three

colors or stainless steel. Unit insulated with glass fiber, balloon-type gasket seals in cold, and door hardware chrome-plated with positive action latch. Measures 20" x 29" x 22" without glides, 23" with glides.

circle 165 on reader service card

Flaked icemaker

Product: "Crystal Tips" Model A-14 flaked icemaker.

Manufacturer: American Automatic Ice Machine Co., Faribault, Minn.

Features: Has wide access door, 60-lb. stainless steel storage bin, and will produce up to 150 lb. of ice a day. Measures 38" x 24" x 26" and requires only



simple drain, water, and electrical connections. Optional are 6" legs. Ice-making cycle works like this: cylindrical ice cracker turns around evaporator and gathers ice as it builds up to predetermined thickness. Ice then lifted from icemaking section and deposited in storage bin.

circle 166 on reader service card

YOUR GUIDE TO PROPER SELECTION of HUBBELL CONTROLS

Whatever your needs for CONTROLS for refrigeration, air conditioning, and industrial applications... Hubbell has the exact controls to solve your requirements... the exact controls designed, developed and manufactured to perform... service free... on all equipment.

Every step... from castings to finished controls... is under the most rigid Hubbell quality control specifications... with each detailed operation carefully performed by skilled craftsmen. Castings poured in Hubbell's wholly-owned foundry are precision finished; assembled with rugged, dependable components; thoroughly tested; and fully inspected to assure service free controls for long working life and to eliminate downtime and production losses.

The Hubbell GUIDE to Proper Selection of Controls for optimum performance under the most severe in-field service enables you to quickly find the Hubbell Controls which add plus value to your refrigeration, air conditioning and industrial equipment.

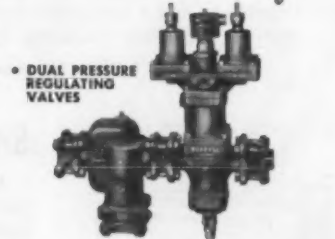
CHECK THIS LIST OF HUBBELL CONTROL BULLETINS... all full of informative data, specifications, etc. Write, on your letterhead, for copies.



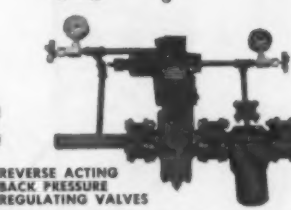
• BACK PRESSURE REGULATING VALVES (conventional and sub-atmospheric — thermal, electric, air operated)



• COMBINATION BACK PRESSURE REGULATING and STOP VALVES

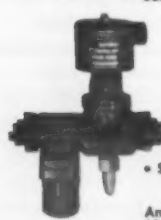


• DUAL PRESSURE REGULATING VALVES

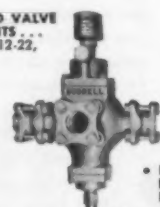


• REVERSE ACTING BACK PRESSURE REGULATING VALVES

• THREE WAY SOLENOID VALVE for ALL REFRIGERANTS... Ammonia, Freon 11-12-22, Carene 7



• SOLENOID VALVES for ALL REFRIGERANTS Ammonia, Freon 11-12-22, Carene 7... for Water, Brine, Oil, Gas and Chemicals



Hubbell engineers are well equipped to furnish you qualified recommendations for your refrigeration, air conditioning and industrial applications CONTROL problems. Send full details for specific answers Dept. 6-D



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• BACK PRESSURE REGULATOR VALVES • DUAL PRESSURE REGULATOR VALVES • AUTOMATIC SUCTION STOP VALVES • SOLENOID VALVES • GAUGES • SAFETY RELIEF VALVES • 3-WAY REVERSING VALVES

"Casting to finished controls... every inch HUBBELL!"

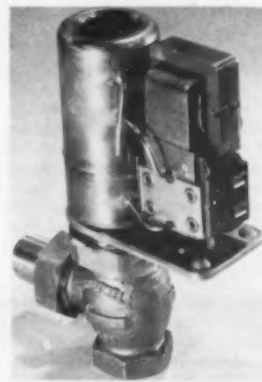
circle 34 on reader service card

Electric control valve

Product: "Fluid-power" electric control valve.

Manufacturer: Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

Features: Uses electromagnetic pump to move liquid metal to control fan-coil units, convectors, radiators and has



Continued on page 94

Descale

**cooling towers,
evaporative condensers,
ice-making machines**

**easily, more safely with
non-fuming Dry Acid Cleaners
based on Du Pont Sulfamic Acid**

EASIER TO USE

Just scoop dry acid cleaners from lightweight, disposable drums into make-up tank. Often can be added directly to equipment . . . no elaborate apparatus required.

SAFER TO HANDLE

These cleaners are dry, non-fuming powders. No danger of spilled or spattered liquids. No danger of corrosive or toxic fumes spreading throughout the building during servicing.

ECONOMICAL

1 lb. of dry acid cleaner does the job of 1.5 lbs. of hydrochloric acid. You'll save on shipping, handling and storage costs.

LESS CORROSIVE

Sulfamic acid is less corrosive than hydrochloric acid; on brass, 60% less; on steel—70%; copper—85%; aluminum—80%. And, with the proper inhibitor, it can be used safely on galvanized steel.

*for more
information,*
mail coupon for free booklet
and names of formulators
who offer these compounds



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Please send me ☐ quick-facts bulletin on Dry Acid Cleaners;
☐ names of formulators offering cleaners based on sulfamic acid.

Name

Company

Address

City State

circle 26 on reader service card



Product DATA

Continued from page 92

only valve stem, power bellows and liquid metal. Components of actuator include field coil, transformer, pump, and reservoir and power bellows. Current flows through field winding and transformer primary, inducing both current and a flux in liquid metal in slit between electrodes and pole pieces. Force then pushes metal through slit

to power bellows at pressures up to 50 psi. Bellows then forces valve stem down, closing valve. When current turned off, return spring pushes stem and power bellows back to original position, and metal flows from power bellows through slit into reservoir bellows. Flux simultaneously reverses so motion of metal continues in same direction although ac reverses itself 120 times a second. Transformer supplies up to 180 amps at reduced voltage of 30 or 40 millivolts to two electrodes. Field coil supplies magnetic field between two pole pieces, and power bellows linked to valve stem which seals against a disc in the cast body.

circle 167 on reader service card

there is a substitute for experience STRAIN-O-KAP® by WATSCO

the modern refrigerant metering device



PART NO. S-1

FOR SOLDER CONNECTION

A strainer-capillary assembly for replacing original capillary tubes and expansion valves.

Strain-O-Kap is complete and eliminates guesswork, cutting or adjustments. Simply install it and forget it.

Use Strain-O-Kaps on sealed or open units.

Refrigerators 1/20 to 1/5 hp inclusive.

Water Coolers 1/4 hp and less.

Freezers 1/3 hp or less.

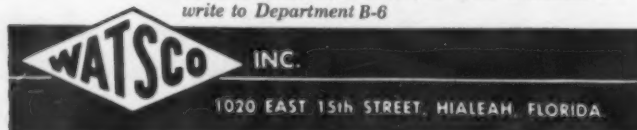


PART No. S-2

FOR FLARE CONNECTION

STRAIN-O-KAP SENIOR Part No. SR-6 for any installation ranging from 1/3 hp to 1 hp inclusive. Just one Strain-O-Kap Sr. kit may be adapted to any one of 72 applications. For low, medium, or high temperatures systems using refrigerants 12 or 22.

For additional information, ask your wholesaler or write to Department B-6



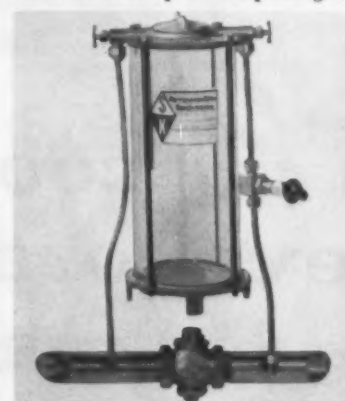
circle 88 on reader service card

Water chemical dispenser

Product: Model K-1200 automatic dispenser of water chemical conditioner.

Manufacturer: Stiles-Karlsonite Corp., Waukegan, Ill.

Features: Has a 12-lb. capacity and will treat water at rate of 40,000 to 50,000 gal. per pound of water conditioner. Includes special tempered glass



cylinder to withstand extreme temperatures and pressures. Dispenser housing of 85-5-5-5 bronze. Built-in venturi feed and instrument-type metering valve for close tolerance adjustment also featured. Designed primarily for large industrial plants to reduce frequency of refilling the dispenser.

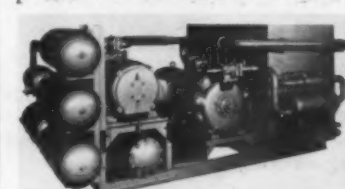
circle 168 on reader service card

Liquid cooler

Product: Liquid cooler (Model W-120).

Manufacturer: Webber Mfg. Co., Indianapolis, Ind.

Features: Provides temperatures down to -120 F. May be used with low temperature convection fluids such as tri-



chloroethylene, acetone, and methylene chloride. Is self-contained, with all components mounted on common base, and has refrigeration capacity of 120,000 Btu/h at -100 F. Accuracy within 0.2 F.

circle 169 on reader service card

Convertible air conditioner

Product: "Adaptomatic V" unitary central air conditioner convertible for remote installations.

Manufacturer: Fedders Corp., Maspeeth, N.Y.

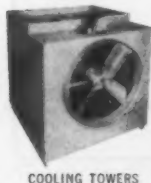
Features: Convertibility because of split chassis with condensing unit separated by bulkhead from evaporator. So can be installed in one piece or, with

Continued on page 97

want to save on job costs?

specify these dependable Halstead & Mitchell products:

PRODUCT	SERIES	TYPE	NOMINAL TONS	WRITE FOR BULLETIN
COOLING TOWERS with an exclusive 20-Year Guarantee on the wetted deck material against failure due to fungus attack or rotting.	EC	Standard • Propeller fan • Belt drive	5 to 150	EC-500
	ECK	Take-Apart • Propeller fan • Belt drive	5 to 100	EC-500
	ECD	Residential • Propeller fan • Direct drive	2 to 7½	EC-500
	ECKB	Standard or Take-Apart • Centrifugal fan • Belt drive • Horizontal or Vertical discharge	5 to 30	ECKB-601
WATER-COOLED CONDENSERS Mechanically cleanable, condensers are of double-tube, true counterflow design for extra liquid subcooling.	EL	Standard for small commercial refrigeration	¼ to 3	WC-300
	WR	Multi-Section for larger commercial refrigeration	2 to 7½	
	R	Close-coupled for packaged air conditioning	1½ to 10	
	T	Heavy duty for poor water conditions	½ to 25	
	SW	Sea water and corrosive water usage	½ to 25	
AIR-COOLED CONDENSERS Wide fin spacing won't clog quickly. Casings are rugged; won't rattle or loosen. Use with a Limitrol valve for year-round operation. Multiple cir-cuiting at no extra cost.	AC	Propeller fan • Horizontal discharge • Belt drive	3 to 100	AC-102
	ACV	Propeller fan • Vertical discharge • Belt drive	5 to 100	
	BC	Centrifugal fan • Belt drive	10 to 30	
	ACR	Residential model • Centrifugal fan • Cabinet has space for compressor and controls	2 to 7½	
FINNED COILS Turbu-Flo® fins for better air wash. Aluminum fins, copper tubing. (Copper fins to order.) Heavy-gauge galvanized steel casings (or aluminum). Clean-able tube water coils to order.	DE	Direct expansion coils for Refrigerants 12, 22 and 500	Standard is 7 fins per inch. Available in 6, 8, or 10 FPI on order. Finned heights of 12 to 36 inches. Finned lengths of 18 to 120 inches. 1 to 8 rows deep. Other sizes to order.	DE-200
	CWC	Chilled water coils		CWC-202
	HWC	Hot water coils		HWC-201
	S	Standard steam coils		S-200
	NFS	Non-freeze steam coils • Steam distributing tube type		
AIR HANDLERS Large centrifugal fans in a heavy-gauge cabinet of formed post members, flush mounted panels. Space for up to 12 rows of coil depth; 2 to 68 sq. ft. of face area.	AH	Suspended type	3 to 120 tons at std. conditions of 880 to 47,500 CFM at 400 to 700 FPM; up to 2" W.G.	AHU-100
	VAH	Floor mounted type		



COOLING TOWERS



AIR HANDLERS



WATER-COOLED CONDENSERS



AIR-COOLED CONDENSERS

FINNED COILS



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circle 32 on reader service card

IMPORTANT



ANNOUNCEMENT

to people who
hear voices*



*voices that intrude or disrupt and noises that project when they should be hushed.

The new Aircoustat® Model W Return Air-Vent Silencers stop the transmission of noise without blocking air flow

Aircoustat Return Air-Vent Silencers eliminate the distracting sound of voices that spill from one area to another. Their slim design gives you a choice of installation. You can install them within a wall or ceiling or hang them on doors or walls. Let Koppers long experience in sound control help you. Write today for information to: KOPPERS COMPANY, INC., 3106 Scott Street, Baltimore 3, Maryland.



Model W
Return Air-
Vent Silencer

In sizes for all applications:

Model	Thickness	Width	Length
W-1	3½"	30"	48"
W-2	3½"	42"	48"
W-3	5"	30"	48"
W-4	5"	42"	48"
W-5	7"	30"	48"
W-6	7"	42"	48"



SOUND CONTROL METAL PRODUCTS DIVISION

® Engineered Products Sold with Service

circle 43 on reader service card

Product DATA

Continued from page 94

four cutoff service valves, as remote system. The 5-hp unit in four models, two with heat pumps and optional supplementary resistance heating. Is factory-charged and wired and shipped as package.

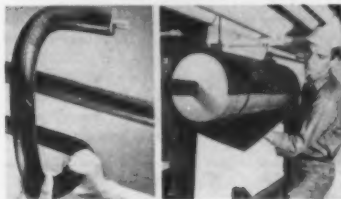
circle 170 on reader service card

Pipe insulation

Product: "Ultra Foam" flexible, foamed plastic pipe insulation.

Manufacturer: Gustin-Bacon Mfg. Co., Kansas City, Mo.

Features: In tube or sheet form and used to insulate liquid cooling and heating lines from sub-zero to 220 F. Its closed cellular structure gives it a K factor of 0.28 at 75 F mean temperature



and a water vapor transmission rating of less than 0.1 perm. Can be slipped over new piping prior to installation or slit longitudinally and snapped over existing piping. May be fabricated into pipe covering for sizes over 3" IPS. In tube form, is manufactured in 6' lengths, from 1/2" to 3 1/2" dia., and in three wall thicknesses, each calculated to prevent condensation on cold lines within individual recommended usage ranges. In sheet form, measures 30 x 36" with thicknesses from 1/8" to 1/2".

circle 171 on reader service card

Soldering tool

Product: "Hotspot" soldering tool.

Manufacturer: Standard Automation Products, Havertown, Pa.

Features: Requires no flame, electricity, external heat. Heats itself by tiny cartridge in its tip. Cartridge actuated by releasing spring rod in handle. Tip heats to 862 F in seconds and tool ready for use. No flame-heating devices or extension cords needed and is available in six interchangeable tip sizes.

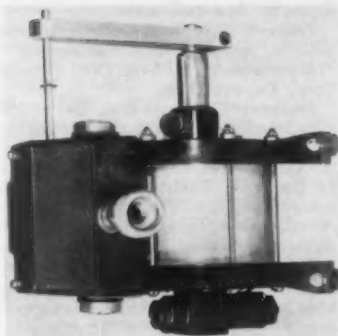
circle 172 on reader service card

Chemical dispenser

Product: "Corvin Proportioner" flow-responsive machine that dispenses chemical treatments.

Manufacturer: Proportioning Devices Div., Vineland Laboratories, Inc., Vineland, N.J.

Features: Blends water-soluble material with water or other liquids at



rate of 1 oz. per gal. and ratio never varies though water pressure peaks at 85 lb. or drops to 2 lb. Hooks up to existing water lines with bypass consisting of two "T" fittings, cutoff valve, and two pieces of pipe. Weighs 3 1/2 lb., is 7 1/2 x 3 1/2", has stainless steel valves.

circle 173 on reader service card

Sound absorber

Product: "Tubular" high velocity sound absorber with free-air body.

Manufacturer: American Engineering Co., Sedalia, Mo.

Features: Of heavy gage galvanized
Continued on page 98

IS HIGH LINE VOLTAGE GIVING YOU SERVICE PROBLEMS?

Never underestimate the trouble that excessive voltage or low voltage can cause to electrical equipment and devices. Check the voltage every time you make a new installation, every time you make a service call. And, if voltage is more than $\pm 5\%$ of normal, recommend and install an Acme Electric Boost and Buck Transformer to correct voltage to the normal required by the connected load.

● AVOID BURN-OUTS BY CORRECTING EXCESSIVE VOLTAGE

High line voltage makes motors heat faster, deteriorates insulation, causes motors to burn out; shortens life of electronic tubes (including tv picture tubes) and incandescent lamps; increases operating cost per hour. An Acme Electric transformer connected to buck a high line-voltage can correct these problems.

● GET MAXIMUM PERFORMANCE BY CORRECTING UNDERVOLTAGE

Motors fail to reach their maximum torque when line-voltage is much below normal, and often continue to operate on starting windings until they heat up and burn out; electronic tubes fail to function properly; fluorescent and incandescent lamps are reduced in light output. An Acme Electric voltage boosting transformer can correct these conditions and save money.



● SEND FOR THIS BULLETIN

Boost and Buck Transformer Bulletin 5A3 contains 15 valuable reference charts, and tabulations providing an instantaneous method of determining size of transformer needed for any load under any off standard voltage condition. Write for your copy.



ACME ELECTRIC CORPORATION

826 WATER STREET • CUBA, N. Y. SA33251/1000
In Canada: Acme Electric Corp., Ltd., 50 Northline Rd., Toronto, Ont.

Acme Electric

circle 2 on reader service card

Product DATA

Continued from page 97

sheet steel, provides greater exposed glass fiber area without affecting in-system air velocity. Nose cones give 360-degree distribution of air entering absorber yet has minimum air flow resistance, resulting in minimum air pressure drop for air distribution system.

circle 174 on reader service card

Remote fan-coil units

Product: Five basic remote fan-coil units for custom room airconditioning.

Manufacturer: Airtemp Div., Chrysler Corp., Dayton, Ohio.

Features: Capacities from 200 to 700 cfm. Supplement packaged water chillers and air handling units. One floor model is cabinet type, other is recessed type for permanent hidden installations. Two ceiling units consist of cabinet and recessed models. These replace firm's 1500 series, which consisted of three models in 200 to 400 cfm range. New units permit either vertical or horizontal installation.

circle 175 on reader service card

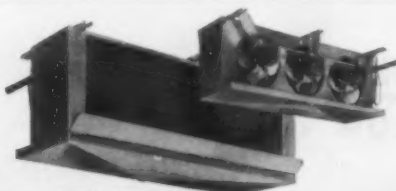
Rooftop unit

Product: Model CRU-801 rooftop heating-cooling unit.

Manufacturer: Air Conditioning Div., Westinghouse Electric Corp., Staunton, Va.

Features: Cooling capacity of 75,900 Btuh, heating capacity 160,000 Btuh. Air-cooled condensing unit, evaporator coil, and control box comprise cooling section; two fans on common shaft, 1-hp fan motor, and variable pitch filters comprise heating section. Each section prewired, mounted on 4" channel iron frame, and enclosed in aluminum panels. Unit includes complete aluminum casing over air handling section, special channel joints to prevent leakage, factory-installed disconnect switches with branch circuit fusing, and free access to fan, fan motor and drive, filters, and burners with removal of one aluminum panel.

circle 176 on reader service card



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26 MODELS
Capacities
600 TO 62000 B.T.U./HR.

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for every requirement



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Capacities
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Los Angeles 38, California

circle 89 on reader service card

Horizontal-sliding dairy door

Product: Horizontal-sliding dairy door.

Manufacturer: Jamison Cold Storage Door Co., Hagerstown, Md.

Features: Provides reliable insulation and easy access to cold storage areas where temperature kept at 20-25 F. Specially suitable for dairy product installations and others where multiple-door loading docks used for rapid truck loading. Front, back, and edges of boat-

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algae, fungi, slime
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DRY ALGAECIDE

Kill green growth and slime in cooling systems with this safe, sure, dry ANCO product. No need for shut-down or manual cleaning. ANCO gives you the most inexpensive, effective way to keep algae and slime out of water lines. Keep cooling systems clean at peak performance with ANCO.



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circle 13 on reader service card

JUNE 1961/THE REFRIGERATION & AIRCONDITIONING BUSINESS

Product DATA

Continued from page 98

hull plywood sheathed with 20-gage steel that's galvanized to resist weathering and corrosion. Polystyrene plastic inside door is insulation and flexible gaskets and seals prevent air leakage. Steel door wedges provide 3-point compression seal. Door suspended from wheeled trolleys on steel overhead track that's slightly inclined so door rolls



automatically to compression seal. Handle at back of door recessed and doesn't project, galvanized steel front handle secured to door edge so projects less than 1". Widths-in-clear range from 2 to 5' in 6" increments, depending on size of door. Doors available with 3, 4, and 6" insulation. Optional features include chrome-plated hardware, stainless steel door cladding, galvanized steel frame cladding, and padlocking provisions.

circle 177 on reader service card

Motor starter

Product: Motor starter in seven sizes.

Manufacturer: Allen-Bradley Co., Milwaukee, Wis.

Features: Sizes are 00 through 5 with maximum ratings from 1½ hp, 220 v., 2 hp, 440-550 v. through 100 hp, 220 v., 200 hp, 440-550 v. Has double break contacts of cadmium oxide silver that resists welding. When open, movable contacts held in alignment with stationary contacts by movable contact support. When coil energized at magnet closes, low velocity of contacts at closure prevents contact rebound. Has totally enclosed arc chambers that confine arc, limiting ionization and resultant heat, and increasing current interrupting capacity. Magnet's short stroke and cushioned mounting reduce impact. Magnet yoke and coil set in large die-cast aluminum mounting which dissipates heat of coil and maintains low operating temperature.

Continued on page 100

circle 86 on reader service card



IMMEDIATE DELIVERY

largest selection anywhere

All sizes on hand for immediate delivery from America's oldest and largest supplier of "in stock" capillary tubing. Available in tagged, random 100' coils. All tubing drawn to closest tolerance.

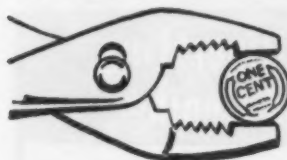
10 SIZES

Part No.	I.D.	O.D.
110	.031	.083
111	.036	.087
113	.044	.109
114	.050	.114
115	.055	.125
116	.064	.125
117	.070	.125
118	.075	.125
119	.080	.145
120	.085	.145

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YOU CAN PINCH PENNIES ...

but the man who needs servicing and testing equipment is already paying for it!

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- HIGH VACUUM PUMPS, GAUGES, AND ACCESSORIES

Airserco is the "complete line" from a test cord to a full production line facility.



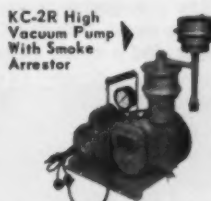
5 lb. Refrigerant Charging Cylinder



Hermetic Unit Cap-Start Test Cord



Thermo-Meter



KC-2R High Vacuum Pump With Smoke Arrester



Capacitor Analyzer

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SLUDGE . . . ALGAE . . .
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Customers . . . DEMAND . . .**

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The SAFE cleaner in powder form!

VAPCO-HIB

For those who "Make Their Own" cleaner!

VAPCO-PHOS NUGGETS

To keep cleaned jobs really clean!

VAPCO SLIME-X

To knock out algae and slime!

VAPCO Ice Machine Cleaner

Safe for all makes and models!

Complete literature on request
or see your dealer — TODAY!



Product DATA

Continued from page 99

perature. Permanent air gap is dissociated from all wearing parts so any pole face wear cannot reduce air gap and result in magnetic sticking. Coils molded under high pressure, solder pot overload relays trip-free and tamperproof, and hold-in contacts molded into coil cover.

circle 178 on reader service card

Air filter

Product: "Kleen Kwik" dry type permanent air filter.

Manufacturer: Air Filter Corp., Milwaukee, Wis.

Features: Is interchangeable with all standard sizes of throwaway filters. Requires no spraying equipment, adhesives, or oils. Cleaned by rapping out excess dirt, washing with warm water, rapping out excess water, and replacing. Lint screens on each side eliminate excessive amount of lint and filtering media encased in galvanized steel with two steel faces to protect material. Heavy gage steel frame supports filter. Made in all standard sizes and in 1 and 2" thicknesses.

circle 179 on reader service card

New cooling units

Product: New 2-ton, 3-ton self-contained airconditioning units.

Manufacturer: Carrier Air Conditioning Co. Div., Carrier Corp., Syracuse, N.Y.

Features: Powered by "Micromite" compressor which is protected by "Time Guard" circuit which prevents rapid cycling and operates condenser fan for

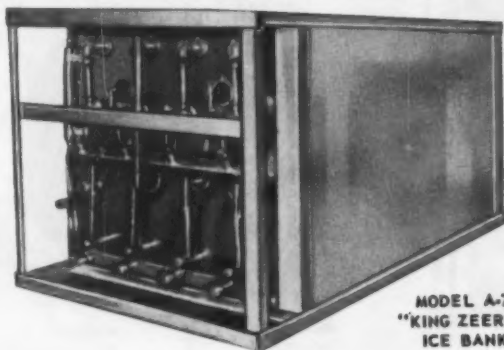


15 seconds before compressor starts. Compressors have crankcase heaters against cold starts and flooding and protected from damage by indoor coil freezeup or refrigerant loss. Both units have larger refrigerant driers and screen to protect outdoor coil against damage. The 3-ton model has valve connections in refrigerant tubing so discharge and suction pressures easily measurable. Also extended 4" in length to decrease fan noise.

circle 180 on reader service card

Add a "King Zeero" ICE BANK to Your Refrigerating System for Effectual, Economical Air Conditioning

The "King Zeero" ICE BANK is designed to deliver 32° to 34°F. ice water for recirculation through air cooling coils in exactly the right amount when and where it is needed. It levels off "peak" and "valley" loads. Peak loads many times compressor capacity are easily handled. Ice Banks may be added to increase existing capacity. Refrigerant: Freon, Methyl Chloride or Ammonia.



MODEL A-7
"KING ZEERO"
ICE BANK

CAPACITIES - 500 lbs. to 30,000 lbs. (72,000 B.T.U.'s to 4,320,000 B.T.U.'s) in a single unit. Multiple units may be installed.

The Patented Coils with Built-in Louvres opposed to the flow of water through the ICE BANK provide turbulence. This eliminates a mechanical agitator - insures all the water rubbing all of the ice. No upkeep or repair expense whatever.

The "King Zeero" Ice Storage System of water chilling has definite advantages over direct expansion, or other types of ice accumulators.

Saves power through smaller compressor requirement. Simple construction (no moving parts). Dependable in performance. Low operating and costs.

Let the ice stored during light loads take care of peak loads. The compressor need only handle the average daily load - not the peak.

THE KING ZEERO COMPANY

4300-14 W. Montrose Ave. - Chicago 41, Ill.

Manufacturers of Ice Builders - Ice Builder Cabinets - Ice Banks



Return air grille

Product: Filter-type return air grille (No. 28).

Manufacturer: Air Control Products, Inc., Coopersville, Mich.

Features: Grille frame holds 1" filter and grille consists of grid-type grille hinged to flush frame that holds filter. Sliding clamp locks filter in place when grille swung open. Full depth frets set at 22-degree angle conceal filter yet provide ample free area. Available in 18 sizes from 12 x 24" to 30 x 20". Filters not provided with grille.

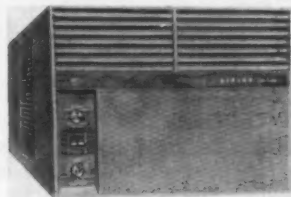
circle 181 on reader service card

Room airconditioner

Product: Room airconditioner (Model B-1110-2).

Manufacturer: Gibson Refrigerator Sales Corp., Sub. of Hupp Corp., Greenville, Mich.

Features: Has 2-speed fan, automatic thermostat, and constant cool control. Also has 11,000 Btu capacity air sweep,



fresh air and exhaust, germ-killing filter, and all galvanized steel construction. Can be installed in window flush inside or thru-the-wall. Has 230 v. electrical system, and slide-out chassis enables servicing of unit without removing cabinet. Dimensions are 17-15/16 x 23-1/8 x 23-15/16".

circle 182 on reader service card

Heat exchanger

Product: Model C-500 heat exchanger series with removable bundles with floating head clamp-ring design.

Manufacturer: Industrial Div., American-Standard, Detroit, Mich.

Features: Designed for applications where frequent tube cleaning necessary or where thermal differential expansion between shell and tubes. Will handle any combination of liquids and gases and may be used as heaters, coolers, condensers, or vaporizers. Available in 19 shell sizes from 8 through 42" and with any practical tube length in two, four, or six tube pass arrangements. Shellside and tubeside design pressures from 75 to 300 psi. Also has design temperatures up to 650 F on shell and tubesides; four types of tubesheet materials; steel or cast-iron channels; reinforced nozzles with radial orientation on both shellside and tubeside; corrosion allowance of 1/16" on all steel parts; dome construction for vapor service; and baffle spacing for specific operating conditions. It can be mounted horizontally or vertically and cradles or mounting brackets can be furnished loose or welded in place.

circle 183 on reader service card

10,000

CONTRACTORS-DEALERS

Have already ordered copies of "You're the Boss," George Webster's 12-part textbook on business management.

Topics discussed in these 12 articles reprinted from the January - December 1958 issues of The Refrigeration & Airconditioning Business are:

HOW TO ANALYZE YOUR BUSINESS
BUSINESS PHILOSOPHY
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ACCOUNTING AS A TOOL OF CONTROL
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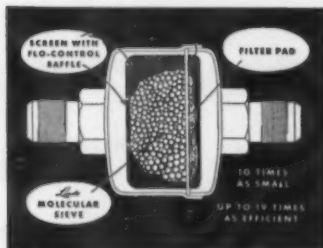
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2. Largest size fits palm of your hand.
3. Save space in refrigeration and air conditioning system design.
4. Simplified line simplifies ordering, stocking and handling.
5. Bulletin 1157 covers Moisture Removal, Filtration, Acid Removal and Low Pressure Drop.

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Another Product of the World's Leading Manufacturer of Liquid Receivers
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102

People

ON THE MOVE

Continued from page 64

New territory manager for C. A. Olsen Mfg. Co. is **Bennet T. Church**. His territory is Texas, Louisiana, Mississippi, Arkansas, and Oklahoma.

Frigid Igloo Mfg. Corp. appoints **Morton H. Mardell** as regional representative for Pennsylvania, Maryland, District of Columbia, and Virginia.

Arkla Air Conditioning Corp. elects three vice presidents. They are: **Dudley E. Heath**, staff coordinator of the Evansville, Ind., plant; **Edward R. Gilmore**, vice president of the meter division in Russellville, Ark., and **William G. Wepfer**, general sales manager of Arkla, Little Rock, Ark.



TOP SALES MANAGER for Janitrol Heating & Air Conditioning in 1960 is **Fred Hamer** (center), Indianapolis district manager. He proudly displays his trophy at Janitrol's Goodwill Get-Together in Miami Beach, Fla. Hamer's territory won the honor by turning in the best sales performance compared to quota. Sharing Hamer's honor are **John W. Read** (left) of Indianapolis and **Robert W. Hoover**, South Bend.

Robert G. Bein joins **Robertshaw-Fulton Controls Co.** as a market analyst in its Richmond, Va., office.

New president of **Quicfrez Inc.** is **Burnett S. Tremlett**. He's been with the company since 1959 as general manager.

Continued on page 104

DO YOU SELL ICE MACHINES?

Here's how **Follett** can help you:

NEW 1961 LITERATURE with proven method of choosing most efficient, most economical ice machine-storage bin combination.

READY FOR DELIVERY—every size Follett bin in stock ready for immediate shipment from our distributors.

FOLLETT QUALITY—best construction and design on the market give trouble-free longtime service.

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Capacities from 250 to 5,000 pounds

MODEL NO. 50



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circle 29 on reader service card

JUNE 1961/THE REFRIGERATION & AIRCONDITIONING BUSINESS

STOLE THE SHOW

New LA-CO Aluminum Soldering Flux "TU-5" Hailed Big Breakthrough in Soldering Aluminum Tubing & Evaporators

We knew we had something big when we perfected LA-CO Aluminum Flux "TU-5". But we honestly didn't expect the enthusiastic reception it has received from refrigeration men. If you didn't see it at the show we'll be glad to send full particulars . . . on how LA-CO Flux "TU-5" saves time and work when repairing evaporators; enables you to solder aluminum tubing with ease.

See for yourself why it stole the show. Write today for the facts.

THE LAKE CHEMICAL COMPANY
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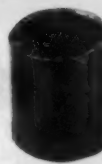
See us at Booth 342, NAPC Exposition, June 18-21, Detroit



BEFORE
SCALEX
TREATMENT

New - Safe
SCALEX

CONTAINS NO
HARMFUL
ACIDS



AFTER
SCALEX
TREATMENT

Safe HARD WATER SCALE REMOVER

SCALEX, the safe, non-toxic controlled acid, liquid scale remover and air conditioning system cleaner, reduces high head pressure rapidly and completely descales the entire system wherever water flows. SCALEX removes all internal scale safely, without damage to aluminum, copper, brass or ferrous metal or non-metallic parts. SCALEX can be used without damage while the system is in normal operation; there are no acid fumes. No neutralizer is needed. SCALEX removes slime and algae instantly.

SCALEX Inhibitor Z is used together with SCALEX when galvanized metal is to be descaled.

NO
ACID
FUMES

SCALEX IS SAFE TO USE
SCALEX IS EASY TO USE
SCALEX IS ECONOMICAL
SCALEX DOES THE JOB

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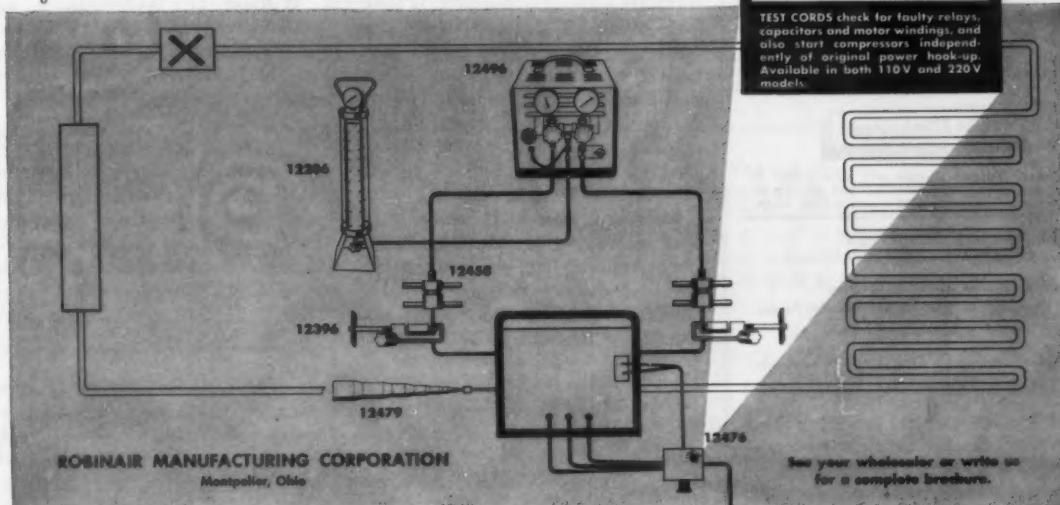


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LESTER LABORATORIES, INC.
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**factory approved tools
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PORTABLE VACUUM PUMPS
are made with features they desire

High Performance Characteristics

Completely Portable



Automatic Lubrication

Single- or Two-Stage

Long Life



Quiet Operation

Minimum Attention

Valves Eliminated

Beach-Russ Vacuum Pumps are also made in types and sizes for evacuation and testing of refrigeration equipment on a production basis.

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6200 GRAYBAR BLDG., NEW YORK 17, N. Y.

Send descriptive literature covering

- ☐ Model O Single-Stage Vacuum Pumps.
☐ Model A Two-Stage Pumps.

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CITY..... ZONE..... STATE.....

BEACH-RUSS CO.

6200 GRAYBAR BUILDING
NEW YORK 17, N. Y.

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People

ON THE MOVE

Continued from page 102

Robert M. Glover becomes manager, western sales district for "Freon" products div., E. I. du Pont de Nemours & Co. effective Sept. 1. Glover is now assistant manager of tetraethyl lead sales and planning in Du Pont's petroleum chemicals div. He replaces Samuel N. Seely, Jr., who is to be transferred to the export sales section of the firm's dyes and chemicals div. as assistant manager.

William A. Finn is elected vice president, group executive of Worthington Corp. He was formerly general manager of the firm's Harrison, N.J., div. A. Edwin Carter, now vice president, manufacturing will succeed Finn.

J. L. Roth becomes first marketing manager for Dunham-Bush, Inc. He was formerly product manager, airconditioning.

A. P. McDiarmid, J. H. Manecke, and J. E. Kumler are named as new vice presidents at Ranco Inc. W. R. Opp is renamed vice president, manufacturing. McDiarmid, formerly secretary-treasurer, is now vice president-secretary-treasurer; Manecke, formerly general sales manager, is vice president, sales, and Kumler, former chief engineer, is now vice president, research and engineering.

George I. Duddy is named district manager of Mueller Brass Co.'s Atlanta, Ga., sales territory. He was district manager of the Houston, Tex., territory until replaced by Richard J. Williams.

J. W. Ward becomes field sales manager of ice machines for Scotsman, Queen Products Div. of King-Seeley Thermos Co. He came to the firm in 1960 as regional sales manager in Atlanta, Ga.

Carrier Air Conditioning Co. adds four to its distributor sales staff. Donald E. Perry becomes sales manager, large packaged equipment; Raymond V. Roberts is sales manager, residential heating equipment; Joseph S. Dougherty is sales manager, room airconditioners, and Ronald R. Hanzl is appointed assistant to Frank Purcell, manager, packaged equipment sales.

N. R. Cole is appointed sales representative for Delavan Mfg. Co. for Washington, Oregon, Idaho, and British Columbia.

John R. Landsell is appointed district manager of the new Cleveland, Ohio, office by Jamison Cold Storage Door Co. His territory includes Michigan, northern Ohio, and western Pennsylvania.

Named as new president of Chrysler Corp.'s Airtemp Div. is William F. Balthrop. He's been president of the Amplex Div., part of Chrysler's special products group, for the past year.

Herrmidifier Co., Inc., appoints W. H. Tonner as sales manager. He was formerly with Morrison Products, Inc.

William D. Wideman is appointed vice president, sales for John J. Nesbitt, Inc. He joined the firm in 1946 and has been general manager since 1952.

Paul M. Augenstein joins American-Standard as executive vice president. Augenstein, a director of Air Conditioning and Refrigeration Institute, has been president of Airtemp Div., Chrysler Corp. since 1958.

Edgar A. Cline, formerly sales manager, is named manager of training at Trane Co. Wesley W. Wright, formerly manager of CenTraVac sales department, replaces Cline. Sales engineer Donald W. Munson replaces Wright.

Help yourself to more information



You're ahead when you take time to find out what's new in refrigeration and air-conditioning.

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Fill out the card completely, circle numbers below the items you want more facts about, drop the card in the mail. We will do the rest.

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4 9 14 19 24 29 34 39 44 49 54 59 64 69 74 79 84 89 94 99 104 109 114 119 124 129 134
5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135

PRODUCT DATA

136 143 150 157 164 171 178 185 192 199
137 144 151 158 165 172 179 186 193 200
138 145 152 159 166 173 180 187 194 201
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206 213 220 227 234 241 248 255 262 269
207 214 221 228 235 242 249 256 263 270
208 215 222 229 236 243 250 257 264 271
209 216 223 230 237 244 251 258 265 272
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COMPANY _____
STREET _____
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NAME _____
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ADVERTISEMENTS

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211 218 225 232 239 246 253 260 267 274
212 219 226 233 240 247 254 261 268 275

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STREET _____
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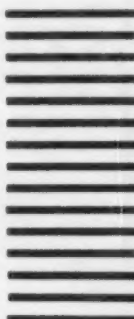
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J. P. Maltbie and R. W. Alexis are appointed regional sales engineers for Linde Co., Div. of Union Carbide Corp. Maltbie covers central states area, with Alexis covering New Jersey, New York, and New England.

BOOK REVIEW

Title: Review of Vacuum for Service Engineers, 112 pages.

Authors: Emmett C. Williams and Harold G. Saunders.

Publisher: Airserco Mfg. Co., Pittsburgh, Pa.

Price: \$4.00.

Designed to aid the service engineer in the airconditioning and refrigeration field in applying proper vacuum techniques for drying out, degassing, and leak testing a system. Discusses the theory of vacuum, starting with an explanation of atmospheric pressure. Other topics include the meaning of vacuum, how it is created, used and measured; high vacuum mechanical pumps and their care; vacuum line sizes and their effect; high vacuum gages and precision charging of a system. Each of the seven chapters is accompanied by graphs, charts, and specifications.

Len Conrad is elected as president of Heil-Quaker Corp. He has been executive vice president and general manager for two years.

J. Paul Jones is elected to board of directors of H. W. Tuttle & Co. and is appointed vice president of engineering and manufacturing. He's been with Whirlpool Corp. and Bendix Home Appliances, Inc.

Joseph C. Kollar is appointed sales representative for Pittsburgh Corning Corp., assigned to the Cincinnati-Cleveland-Indianapolis territory.

American-Standard Air Conditioning Div. makes two marketing appointments. R. David Kishbauch is named sales manager and John P. Farrell is new products manager. Kishbauch has been midwest regional manager, eastern regional manager, and district representative in Philadelphia. Farrell was formerly product manager, heating products.

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MORE SERVICEMEN PREFER MADDEN



HP-41

**BEST BUY
FOR THE
MONEY**

**1 VALVE
PIERCES
4 TUBE**

SIZES!

3/16" | 1/4" | 5/16" | 3/8"

**DUO-TEST QUICK COUPLER
CHARGING LINES**

36" flexible line. Quick Coupler elbow on one end. Color coded in sets.



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FLAKED ICE MACHINES

For Profitable Sales In A Growing Responsive Market

Market studies show flaked ice machine sales are zooming—and Ross-Temp is the line to sell because it has the sales features that people BUY. To list a few:

1. An ice harvester with only one moving part.
2. Waist high models that can slide under bars and counters or fit in modular equipment installations.
3. Capacities **REALISTICALLY RATED** for hot summer days.
4. Low operating cost.
5. A choice of 20 automatic models with daily capacities from 150 to 525 pounds.



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can profit
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BUSINESS *Briefs*

Continued from page 6

ASSOCIATIONS

New name of the national oil heat association is **National Oil Fuel Institute**. It was formed by merger of Oil Heat Institute and National Fuel Oil Council. Glenn L. Werly, special assistant to the vice president of Mobil Oil Co., has been named president.

Werly has appointed Charles H. Burkhardt managing director of marketing-distribution and equipment-technical division. Burkhardt, formerly managing director of OHI, is also vice president of the new group.

Frederick S. Burroughs is managing director of promotion-communications division as well as secretary of NOFI, and Ralph Hartell is communications director for all divisions. Burroughs was

secretary of OHI and Hartell was communications director of NFOC.

Representatives of 22 member companies of **National Electrical Manufacturers Association** have organized an unconventional power generation section within the association. A 5-man program committee was picked to prepare recommendations to the section concerning proposed projects.

A breakdown of the final 1960 census figures shows that local **Better Heating-Cooling Councils** are operating in one out of every two major hydronic marketing areas. Marketing areas without local BHC councils are serviced with industry data, publicity, and other information directly from National BHC.

Separate **Silver Shield** dealer meetings were held this spring. Members of southern indoor comfort bureaus met in New Orleans,

La., April 28, while northern representatives got together May 6 in Cleveland, Ohio. Chairman of the southern meeting was Charles Graham, Nashville, Tenn.; Glen Rybrand of Kalamazoo, Mich., headed the northern gathering.

John T. McCann is new executive vice president of **Mechanical Contractors Association of America, Inc.** He was formerly director of industrial relations for General Bronze Corp.

First standard ever written for mineral wool building insulation has been published by **National Mineral Wool Insulation Association**. It defines three thermal performance categories for homes in terms of both "U" values and installed resistance units or product designation.

New president of **National Insulation Manufacturers Association** is Emil T. Johnson, vice president

Figure time and labor costs quicker . . . more accurately



—with this labor calculator guide book. Gives correct time elements for hundreds of mechanical contracting and engineering projects. These time elements are averages of many successful projects, and fully reliable. Use them to speed your estimating . . . to help you in budgeting, to figure your completion dates, and to check the efficiency of your labor. Use them to tell whether you're making a profit on labor. The "Mech-O-Lator" ends guesswork . . . pays for itself many times over. **\$15**

Comes in 7 indexed sections covering time-labor costs in Air Conditioning, Plumbing, Heating Equipment, Fittings, Valves, Pipe, Pumps, Misc. (Insulation, Water Meters, Tanks, etc.)

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Send.....copies of "The MECH-O-LATOR" at \$15 each.
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► **SURE-KLEAN** ^{NUMBER 1}
AIR CONDITIONING PLANT CLEANER



Dissolves SCALE from tower, water jacket, compressor, heat exchanger and all water connections . . . thoroughly and safely . . . without worry. Will not clog tubes or jam pumps. It's 100% soluble in water—needs no neutralization.

Sure Klean is guaranteed to lower high-head pressure faster than any other cleaner!

It's so easy and convenient to use with our new, unbreakable plastic container. Available in one and five-gallon sizes . . . also drums.

FREE! A large trial size bottle so you can test it yourself. Drop us a note on your letterhead.

The Process Solvent Co., Inc.
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JUNE 1961/THE REFRIGERATION & AIRCONDITIONING BUSINESS

of Union Asbestos & Rubber Co. M. W. Burleson, vice president of Johns-Manville Sales Corp., succeeds Johnson as vice president. Ike Keith, president of Forty-Eight Insulations, Inc., is treasurer and John M. Barnhart is executive secretary.

New president of American Society of Heating, Refrigerating and Air-Conditioning Engineers is Robert H. Tull. He's manager of product engineering department, Westinghouse Electric Corp., Columbus, Ohio. Also elected were J. Everetts, Jr., first vice president, and John H. Fox, second vice president. John E. Dube was renamed treasurer. Committee chairmen were also named — Robert G. Wenden, public relations, and R. A. Line, program.

Silver Shield programs have been started at the rate of one a week during the first two months of 1961, say officials of National Warm Air Heating and Air Conditioning

Association. There are programs now underway or in varying stages of development in 24 cities.

NAMED TO REPRESENT

Typhoon Air Conditioning Div., Hupp Corp.—*Air Conditioning Wholesalers, Inc.*, Rochester, for western New York State.

CRS Industries, Inc.—*Schultz & James, Inc.*, Richmond, for Virginia; *Atech Supply Co.*, Detroit, for Michigan, and *Norman S. Wright & Co.*, Spokane, covering eastern Washington.

Recold Corp.—*R. E. Newlin & Associates*, New Orleans, La., for airconditioning products and *William C. Collins*, Manchester, Conn., for refrigeration products in New England.

Air Pollution Control Div., John Wood Co.—*Hampton Engineered*

Equipment Co., New York City, covering New York State and Connecticut.

Connor Engineering Corp.—*R. E. Lindsey Co.*, Jackson, for Mississippi.

Stewart-Warner Corp., Heating and Air Conditioning Div.—*Norris Blanchard Co.*, Omaha, covering Nebraska, Iowa, and southern South Dakota.

General Blower Co.—*Robert McAndrews*, Cincinnati, Ohio, and *Dick Jacobs Co.*, Detroit, Mich.

EXPANSIONS

Construction starts on a 28,000-sq.ft. addition to **Trane Co.**'s home plant at La Crosse, Wis. The additional space will provide room for producing Trane's new compressor lines.

Continued on page 108



NEW SLIDING DOOR REACH-IN FROM LA CROSSE

Nobody beats La Crosse on quality . . . and this All-New REACH-IN proves it! Gleaming white enamel or stainless steel exterior . . . all aluminum exterior . . . fully adjustable shelves . . . easy-sliding Thermo Glass Doors. Top capacity . . . a full 35 cubic feet holds up to 590 quart milk cartons or over 1,000 7 oz. bottles. Top economy . . . dependable operation year after year.



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THE REFRIGERATION & AIRCONDITIONING BUSINESS/JUNE 1961



**"These Kits Ended
Money-Losing
Call-Backs
on Domestic
Refrigeration
Service Jobs."**

KLIXON® Starting Relay and Motor Protector Kits let you handle most jobs in ONE service call . . . keep less inventory . . . make fewer trips to suppliers (9 Relays replace 159, 8 Protectors replace long line). Leads and terminal screws included. Chart (H.P. to Relay Number) on inside cover. Available now at your distributor.



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A CORPORATE DIVISION OF
TEXAS INSTRUMENTS INCORPORATED

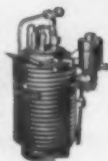
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Easy as 1-2-3 to install the Temprite Bantam-100 CARBONATOR



Why pass up steady big-time carbonator business? Easy as 1-2-3 to install—the Bantam-100 takes no time at all! Just 3 simple connections, hook up the power, and the mighty little Bantam-100 is off and running—way out front in performance! It's fully automatic and worry free! Let the Bantam join your sales force and watch the feathers fly!

TEMPRITE CARBO-COOLER
COOLS and CARBONATES from THE SAME UNIT! Delivers up to 300 glasses hourly! Compact replacement unit for cold drink vending machines, or wherever carbonated water is served. Famous Temprite instantaneous cooling principle and trouble-free service. Measures only 7 1/4" O.D. x 15" height.



Manufactured under rigid quality control by
TEMPRITE PRODUCTS CORPORATION
BIRMINGHAM, MICHIGAN

Rush me details on Bantam-100 and Carbo-Cooler.

Name _____
Company _____
Address _____
City _____ State _____

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BUSINESS *Briefs*

Continued from page 107

A recent expansion doubles plant capacity at Council Mfg. Co., Fort Smith, Ark. Expansion was necessary by demand by food service firms for icemakers and drinkmakers. A total of 80,000 sq.ft. were added, half in the plant area.

SALES FIGURES

Trane Co. reported increases in sales and profits for 1960. Sales were \$102,461,451, up from \$84,112,872 a year ago. Profits were up more than \$1.6 million.

Net sales for Bell & Gossett Co. for the first quarter of 1961 show a 3.4% decrease from 1960. Total through this March was \$6,185,182.

Typhoon's airconditioning and heat pump divisions report a 12% rise in sales for the first six months of the division's fiscal year which began in September.

MERGERS

White-Rodgers Co. acquires assets of Signet Controls Div., Iron Fireman Mfg. Co. Signet service and repair stations will continue operations and Iron Fireman will continue to service both in-warranty and out-of-warranty controls as required.

Penn Controls, Inc., acquires Pioneer Electric & Research Co. through exchange of stock. Pioneer manufactures solid state electronic devices for telecommunication and remote control and also makes miniature motors. Pioneer, located in Forest Park, Ill., will operate as a wholly-owned subsidiary of Penn and will function independently under its present management.

Continued on page 110

BUILD YOUR BUSINESS ON \$43.00!



Install • Service •
Find and Fix Leaks
with the

PREST-O-LITE Refrigeration and Air Conditioning Outfit

This single compact kit costs only \$43, yet contains every essential piece of equipment for your work. You get three interchangeable open-flame stems to provide the right air-acetylene flame for soldering, brazing, or heating. Fit the sensitive leak detector stem to the same torch handle, and you can pinpoint the tiniest halide gas leaks—as little as 100 parts in 1,000,000 parts of air. Compare that with soapy water!

In one sturdy carrying case, the kit also includes an adjustable gas pressure regulator, torch handle, and hose—everything for the installation, repair, and everyday maintenance of all types of refrigeration and air conditioning systems. See your local Prest-O-Lite dealer. Or write Linde Company, Division of Union Carbide Corporation, 270 Park Ave., New York 17, N.Y.

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COMPANY**

**UNION
CARBIDE**

"Linde," "Prest-O-Lite," and "Union Carbide" are registered trade marks of Union Carbide Corporation.

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Thank you, 74%

Good news! When we surveyed air-conditioning dealers in 21 cities last summer, we found that 74% knew of our Certification program. More important: 6 out of 10 familiar with the program *use it in their selling.*

Thus, in less than two years, air-conditioning dealers have demonstrated their enthusiasm for ARI certification. Many have thought up ingenious ways to sell with the program—and we're delighted.

But we won't rest on our laurels. Dealers kept telling us they'd like a sales piece that would explain the ARI Certification program to their customers, so we designed "How to

Buy Central Air-Conditioning." It tells consumers the whys and hows of air conditioning, outlines the Certification program, suggests why air conditioning should not be bought on the basis of price alone. For a sample copy, write (on your letterhead, please) ARI.



AIR CONDITIONING AND REFRIGERATION INSTITUTE

Department J-612, 1346 Connecticut Ave., N.W., Washington, D.C.

BUSINESS *Briefs*

Continued from page 108

Westinghouse is awarded contract for new homes

Westinghouse Electric Corp. has been awarded a contract to supply electric appliances, electric heating and airconditioning units, and related home equipment for a \$100 million home development project now underway in Bradenton, Fla.

According to the developer, this residential area will be the largest "total electric" community in the state.

The corporation also has received a contract for electrical equipment for an all-electric apartment building in Gulfport, Miss.

New firm takes over Aminco component line

AC&R Components, Inc. has been formed to manufacture and market the line of airconditioning

CLASSIFIED ADVERTISING

Classified Advertising Rates: \$20 for first column inch; \$15 for each additional column inch or fraction. All classified advertising payable in advance.

FOR SALE

REPLACEMENT PARTS for all soda fountains & carbonators. Trade discounts allowed. Catalog \$2.00 deposit. Replacement, exchange or repair. 24 hour service. Guaranteed satisfaction. **MACON FOUNTAIN SERVICE**, P.O. Box 864B, Macon, Ga.

and refrigeration components formerly produced by the defunct Aminco Refrigeration Products Co.

Ed Kellie, founder and president of Aminco, will personally supervise engineering and sales of the new product lines. Hal McPherson is chairman of the board and president of AC&R; R. L. Lempke is secretary-treasurer.

Factory of the new organization is in Chicago, but Kellie is maintaining sales headquarters in Detroit. The company is now in production on hot gas discharge line mufflers and oil separators.

Glen Alden sells Mathes in stock transaction

Mathes Co., Div. of Glen Alden Corp., has been sold to Republic-Transcon Industries, Inc., a manufacturer of water heaters and other appliances. Mathes produces residential, commercial, and industrial airconditioning and heating equipment.

Glen Alden, in return, acquires a 30% common stock interest in Republic-Transcon, as well as a long term, 8½-year installment note for \$2 million.

No change in Mathes personnel is expected. The sales agreement is subject to okay by R-T stockholders.

Weksler expands sales

Expansion of sales and production facilities became effective March 1 at Weksler Instruments Corp. This program aims to provide a closer liaison between field sales personnel and company management, as well as improved customer services. Construction of a new building is underway.




MORTITE white CAULKING CORD
Package contains three 16' rolls. ½" rope-like cords stay permanently pliable.

MORTITE white CAULKING GUM
Comes in pliable 1 lb. slug. Hand molds into beads, wads, gaskets, etc.



Mr. Serviceman

With these sealers, you can finish any caulking job easier, faster, more economically. Get the facts. Mail this coupon today.

Mortell Company
548 Burch St, Kankakee, Ill.

O.K., send full information about all Mortell refrigeration products.

I am a jobber ☐ Dealer ☐ Serviceman ☐

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Firm _____

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WATER

that is

- CRYSTAL CLEAR
- NON-CORROSIVE
- NON-CLOGGING
- NON-PRECIPITATING

with

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WATER CONDITIONING

Stiles-Karlsonite Water Conditioning halts corrosion... scale... on all your water-using equipment. ● Preventive maintenance... NOW... with Stiles-Karlsonite Water Conditioning products prolongs equipment life... improves operating efficiency... keeps water systems trouble-free.

Today... write for new 24-page brochure... full of valuable information.

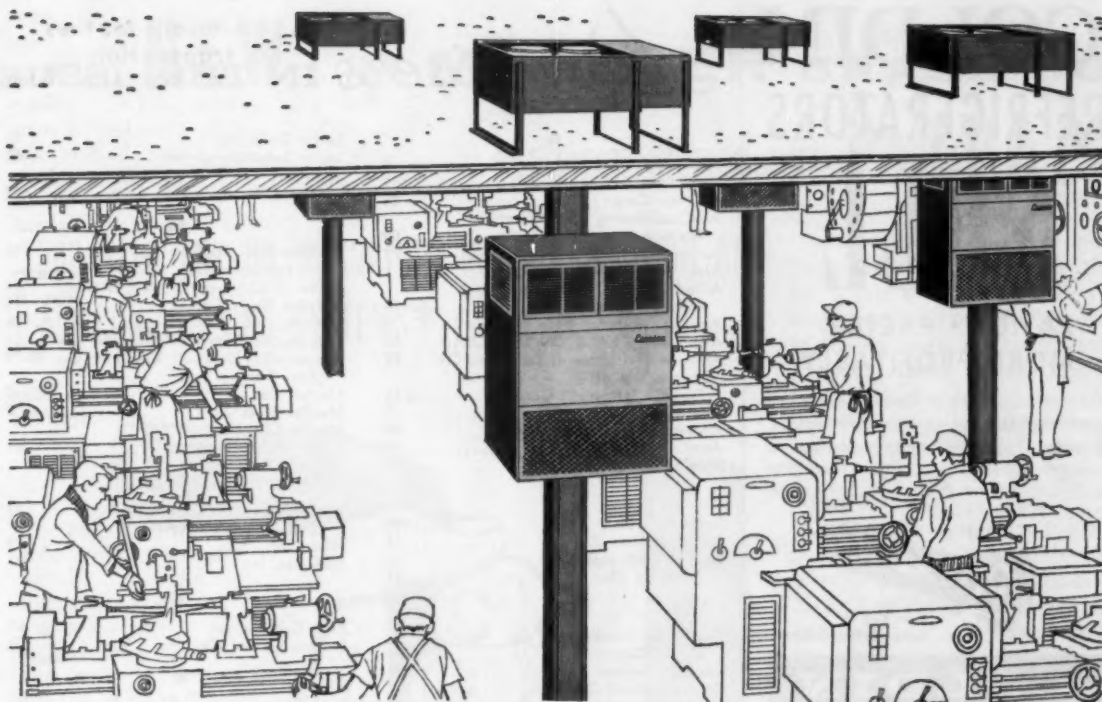


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JUNE 1963/THE REFRIGERATION & AIRCONDITIONING BUSINESS



Typical installation: Outdoor sections on the roof; indoor sections hung on columns.

New Carrier Heat Pump Weathermakers are practical even in colder climates

For your prospects who plan to build a new plant, or replace their present heating system, the Carrier Heat Pump Weathermaker* offers you a real profit potential—even in colder climates. Here's why. It is no longer true that climate is a deterrent to choosing a heat pump. The improved designs of these all-electric Weathermakers combined with the heat load from concentrations of light, machinery and people in industrial applications now make it possible to operate heat pumps as economically in colder climates as many types of conventional systems.

Besides operating economies, these heat pumps are space savers, too. The indoor sections of these versatile Carrier units may be suspended from the ceiling, hung on the walls, or they may stand on the floor. The arrangement shown above is for a one-story plant of about 30,000 square feet. The indoor sections are hung on columns to allow the freedom of four-way air discharge; the outdoor sections are installed on the

roof. Other arrangements can be tailored to your own particular requirements.

There are other dividends as well. Because it is all electric, soot, smoke, flame, fuel lines and storage tanks are eliminated from the heating system. Because it is also air-cooled, it requires no plumbing, water, or water towers. Because it is a one-system heating-and-cooling package, maintenance costs are cut. Fewer moving parts mean less servicing. And because a Carrier Heat Pump Weathermaker operates year-round, the normal expense resulting from seasonal startups and shutdowns is eliminated entirely.

Carrier manufactures a complete series of packaged heat pumps in addition to other air conditioning equipment. For complete details about the line, call your Carrier distributor... you'll find him listed in the Yellow Pages. Or write Carrier Air Conditioning Company, Syracuse 1, New York.

*Reg. U.S. Pat. Off.

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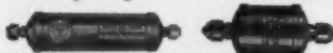


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Refrigeration Research offers a high quality line of driers for every need.....in a complete size range. All Refrigeration Research driers contain proven filtering media and are generously sized.

Bull Dog Progressive Filter-Driers



Your choice - Silica Gel or Molecular Sieve desiccant. Bull Dog Filter-Driers feature progressive filtering.....retain a maximum amount of moisture, dirt and foreign matter without showing increased pressure drop. Low in cost and high in quality.....specify the Bull Dog line.....in the drying agent of your choice.

Deluxe Dehydrators

Deluxe dehydrators feature all brass construction and extra large fittings. Containing Silica Gel desiccant, they are available in either refillable or non-refillable sizes.

Driers - Receiver Driers - Receivers
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Streamline® ONE-PIECE SUCTION-LINE P-TRAPS

FOR EFFICIENT OIL MIGRATION IN REFRIGERATION AND AIR-CONDITIONING SYSTEMS*...

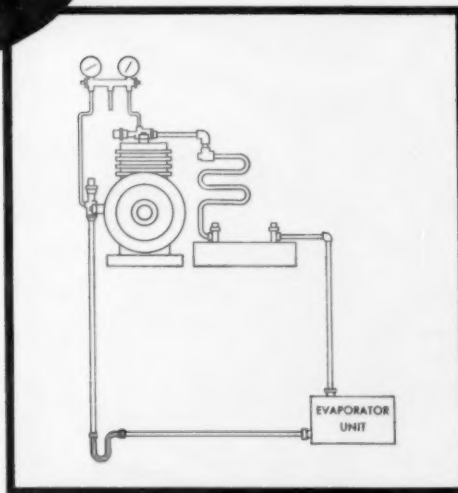


ONE PIECE DESIGN SAVES LABOR AND MATERIALS

The new Streamline P-Trap replaces the cumbersome assemblies of individual fittings with one piece of seamless copper tube, thereby reducing the high costs of labor and materials. The P-Trap is manufactured in 3 popular O.D. sizes; $\frac{3}{8}$ ", $1\frac{1}{8}$ " and $1\frac{3}{8}$ ", and is ready to be soldered into the line. Use this handy P-Trap in your next installation. Your wholesaler has them in stock. For further information, send for Product Data Sheet No. 14.

Streamline wrought-copper suction-line P-Traps, just introduced by Mueller Brass Co., answer a definite demand for an effective method of promoting efficient oil migration in modern refrigeration systems. Today, for example, in many large food markets and other outlets employing refrigeration, compressors and condensers are installed on balconies. Such remote units are likely to have long horizontal suction lines or vertical risers exceeding 3' in height which create the problem of unsatisfactory oil return to the compressor. The installation of a Streamline Suction-Line P-Trap quickly and effectively eliminates this problem because the P-Trap drains the oil from the horizontal runs approaching the risers; the oil then migrates back to the compressor, either as a rippling oil film, a mist, or a transparent colloidal dispersion. Vapor velocity can fall as low as 160 feet per minute and satisfactory oil return can still be achieved when a Streamline P-Trap is installed.

* The need for, and the effect of P-Traps on systems having long horizontal suction lines or vertical risers, is fully discussed in Section 66 of the R.S.E.S. Service Manual.



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